

SPECIFICATIONS PART 1

École élémentaire catholique J.-L.-Couroux

Project No. 2025JLC117

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CCDC 2

Stipulated Price Contract

2 0 2 0

[Name of Project]

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AGREEMENT BETWEEN OWNER AND CONTRACTOR

For use when a stipulated price is the basis of payment.

This Agreement made on _____ day of _____ in the year _____.
by and between the parties

hereinafter called the "Owner"

and

hereinafter called the "Contractor"

The Owner and the Contractor agree as follows:

ARTICLE A-1 THE WORK

The Contractor shall:

1.1 perform the *Work* required by the *Contract Documents* for (insert below the description or title of the *Work*)

located at (insert below the Place of the *Work*)

for which the Agreement has been signed by the parties, and for which (insert below the name of the Consultant)

is acting as and is hereinafter called the "Consultant" and

1.2 do and fulfill everything indicated by the *Contract Documents*, and

1.3 commence the *Work* by the _____ day of _____ in the year _____ and, subject to adjustment in *Contract Time* as provided for in the *Contract Documents*, attain *Ready-for-Takeover*, by the _____ day of _____ in the year _____.

ARTICLE A-2 AGREEMENTS AND AMENDMENTS

2.1 The *Contract* supersedes all prior negotiations, representations or agreements, either written or oral, relating in any manner to the *Work*, including the bid documents that are not expressly listed in Article A-3 of the Agreement – CONTRACT DOCUMENTS.

2.2 The *Contract* may be amended only as provided in the *Contract Documents*.

ARTICLE A-3 CONTRACT DOCUMENTS

3.1 The following are the *Contract Documents* referred to in Article A-1 of the Agreement – THE WORK:

- Agreement between *Owner* and *Contractor*
- Definitions
- General Conditions

*

** (Insert here, attaching additional pages if required, a list identifying all other Contract Documents e.g. supplementary conditions; Division 01 of the Specifications – GENERAL REQUIREMENTS; Project information that the Contractor may rely upon; technical Specifications, giving a list of contents with section numbers and titles, number of pages and date; material finishing schedules; Drawings, giving drawing number, title, date, revision date or mark; addenda, giving title, number, date; time schedule)*

ARTICLE A-4 CONTRACT PRICE

4.1 The *Contract Price*, which excludes *Value Added Taxes*, is:

/100 dollars \$

4.2 *Value Added Taxes* (of _____ %) payable by the *Owner* to the *Contractor* are:

/100 dollars \$

4.3 Total amount payable by the *Owner* to the *Contractor* for the *Work* is:

/100 dollars \$

4.4 These amounts shall be subject to adjustments as provided in the *Contract Documents*.

4.5 All amounts are in Canadian funds.

ARTICLE A-5 PAYMENT

5.1 Subject to the provisions of the *Contract Documents* and *Payment Legislation*, and in accordance with legislation and statutory regulations respecting holdback percentages, the *Owner* shall:

- .1 make progress payments to the *Contractor* on account of the *Contract Price* when due in the amount certified by the *Consultant* unless otherwise prescribed by *Payment Legislation* together with such *Value Added Taxes* as may be applicable to such payments,
- .2 upon *Substantial Performance of the Work*, pay to the *Contractor* the unpaid balance of the holdback amount when due together with such *Value Added Taxes* as may be applicable to such payment, and
- .3 upon the issuance of the final certificate for payment, pay to the *Contractor* the unpaid balance of the *Contract Price* when due together with such *Value Added Taxes* as may be applicable to such payment.

5.2 Interest

- .1 Should either party fail to make payments as they become due under the terms of the *Contract* or in an award by adjudication, arbitration or court, interest at the following rates on such unpaid amounts shall also become due and payable until payment:
 - (1) 2% per annum above the prime rate for the first 60 days.
 - (2) 4% per annum above the prime rate after the first 60 days.

Such interest shall be compounded on a monthly basis. The prime rate shall be the rate of interest quoted by
(Insert name of chartered lending institution whose prime rate is to be used)

for prime business loans as it may change from time to time.

- .2 Interest shall apply at the rate and in the manner prescribed by paragraph 5.2.1 of this Article on the settlement amount of any claim in dispute that is resolved either pursuant to Part 8 of the General Conditions – DISPUTE RESOLUTION or otherwise, from the date the amount would have been due and payable under the *Contract*, had it not been in dispute, until the date it is paid.

ARTICLE A-6 RECEIPT OF AND ADDRESSES FOR NOTICES IN WRITING

6.1 *Notices in Writing* will be addressed to the recipient at the address set out below.

6.2 The delivery of a *Notice in Writing* will be by hand, by courier, by prepaid first class mail, or by other form of electronic communication during the transmission of which no indication of failure of receipt is communicated to the sender.

6.3 A *Notice in Writing* delivered by one party in accordance with this *Contract* will be deemed to have been received by the other party on the date of delivery if delivered by hand or courier, or if sent by mail it will be deemed to have been received five calendar days after the date on which it was mailed, provided that if either such day is not a *Working Day*, then the *Notice in Writing* will be deemed to have been received on the *Working Day* next following such day.

6.4 A *Notice in Writing* sent by any form of electronic communication will be deemed to have been received on the date of its transmission provided that if such day is not a *Working Day* or if it is received after the end of normal business hours on the date of its transmission at the place of receipt, then it will be deemed to have been received at the opening of business at the place of receipt on the first *Working Day* next following the transmission thereof.

6.5 An address for a party may be changed by *Notice in Writing* to the other party setting out the new address in accordance with this Article.

Owner

*name of Owner**

address

email address

Contractor

*name of Contractor**

address

email address

Consultant

*name of Consultant**

address

email address

** If it is intended that a specific individual must receive the notice, that individual's name shall be indicated.*

ARTICLE A-7 LANGUAGE OF THE CONTRACT

- 7.1 When the *Contract Documents* are prepared in both the English and French languages, it is agreed that in the event of any apparent discrepancy between the English and French versions, the English / French # language shall prevail.
Complete this statement by striking out inapplicable term.
- 7.2 This Agreement is drawn in English at the request of the parties hereto. La présente convention est rédigée en anglais à la demande des parties.

ARTICLE A-8 SUCCESSION

- 8.1 The *Contract* shall enure to the benefit of and be binding upon the parties hereto, their respective heirs, legal representatives, successors, and assigns.

In witness whereof the parties hereto have executed this Agreement by the hands of their duly authorized representatives.

SIGNED AND DELIVERED
in the presence of:

WITNESS

OWNER

name of Owner

signature

signature

name of person signing

name and title of person signing

WITNESS

CONTRACTOR

name of Contractor

signature

signature

name of person signing

name and title of person signing

- N.B. Where legal jurisdiction, local practice or Owner or Contractor requirement calls for:*
- (a) proof of authority to execute this document, attach such proof of authority in the form of a certified copy of a resolution naming the representative(s) authorized to sign the Agreement for and on behalf of the corporation or partnership; or*
 - (b) the affixing of a corporate seal, this Agreement should be properly sealed.*

DEFINITIONS

The following Definitions shall apply to all *Contract Documents*.

Change Directive

A *Change Directive* is a written instruction prepared by the *Consultant* and signed by the *Owner* directing the *Contractor* to proceed with a change in the *Work* within the general scope of the *Contract Documents* prior to the *Owner* and the *Contractor* agreeing upon adjustments in the *Contract Price* and the *Contract Time*.

Change Order

A *Change Order* is a written amendment to the *Contract* prepared by the *Consultant* and signed by the *Owner* and the *Contractor* stating their agreement upon:

- a change in the *Work*;
- the method of adjustment or the amount of the adjustment in the *Contract Price*, if any; and
- the extent of the adjustment in the *Contract Time*, if any.

Construction Equipment

Construction Equipment means all machinery and equipment, either operated or not operated, that is required for preparing, fabricating, conveying, erecting, or otherwise performing the *Work* but is not incorporated into the *Work*.

Consultant

The *Consultant* is the person or entity engaged by the *Owner* and identified as such in the Agreement. The *Consultant* is the Architect, the Engineer or entity licensed to practise in the province or territory of the *Place of the Work*.

Contract

The *Contract* is the undertaking by the parties to perform their respective duties, responsibilities and obligations as prescribed in the *Contract Documents* and represents the entire agreement between the parties.

Contract Documents

The *Contract Documents* consist of those documents listed in Article A-3 of the Agreement – CONTRACT DOCUMENTS and amendments agreed upon between the parties.

Contract Price

The *Contract Price* is the amount stipulated in Article A-4 of the Agreement – CONTRACT PRICE.

Contract Time

The *Contract Time* is the time from commencement of the *Work* to the date of *Ready-for-Takeover* as stipulated in paragraph 1.3 of Article A-1 of the Agreement – THE WORK.

Contractor

The *Contractor* is the person or entity identified as such in the Agreement.

Drawings

The *Drawings* are the graphic and pictorial portions of the *Contract Documents*, wherever located and whenever issued, showing the design, location and dimensions of the *Work*, generally including plans, elevations, sections, details, and diagrams.

Notice in Writing

A *Notice in Writing*, where identified in the *Contract Documents*, is a written communication between the parties or between them and the *Consultant* that is transmitted in accordance with the provisions of Article A-6 of the Agreement – RECEIPT OF AND ADDRESSES FOR NOTICES IN WRITING.

Owner

The *Owner* is the person or entity identified as such in the Agreement.

Other Contractor

Other Contractor means a contractor, other than the *Contractor* or a *Subcontractor*, engaged by the *Owner* for the *Project*.

Payment Legislation

Payment Legislation means such legislation in effect at the *Place of the Work* which governs payment under construction contracts.

Place of the Work

The *Place of the Work* is the designated site or location of the *Work* identified in the *Contract Documents*.

Product

Product or Products means material, machinery, equipment, and fixtures forming part of the *Work*, but does not include *Construction Equipment*.

Project

The *Project* means the total construction contemplated of which the *Work* may be the whole or a part.

Ready-for-Takeover

Ready-for-Takeover shall have been attained when the conditions set out in paragraph 12.1.1 of GC 12.1 – READY-FOR-TAKEOVER have been met, as verified by the *Consultant* pursuant to paragraph 12.1.4.2 of GC 12.1 – READY-FOR-TAKEOVER.

Shop Drawings

Shop Drawings are drawings, diagrams, illustrations, schedules, performance charts, brochures, *Product* data, and other data which the *Contractor* provides to illustrate details of portions of the *Work*.

Specifications

The *Specifications* are that portion of the *Contract Documents*, wherever located and whenever issued, consisting of the written requirements and standards for *Products*, systems, workmanship, quality, and the services necessary for the performance of the *Work*.

Subcontractor

A *Subcontractor* is a person or entity having a direct contract with the *Contractor* to perform a part or parts of the *Work* at the *Place of the Work*.

Substantial Performance of the Work

Substantial Performance of the Work is as defined in the lien legislation applicable to the *Place of the Work*.

Supplemental Instruction

A *Supplemental Instruction* is an instruction, not involving adjustment in the *Contract Price* or *Contract Time*, in the form of *Specifications*, *Drawings*, schedules, samples, models, or written instructions, consistent with the intent of the *Contract Documents*. It is to be issued by the *Consultant* to supplement the *Contract Documents* as required for the performance of the *Work*.

Supplier

A *Supplier* is a person or entity having a direct contract with the *Contractor* to supply *Products*.

Temporary Work

Temporary Work means temporary supports, structures, facilities, services, and other temporary items, excluding *Construction Equipment*, required for the execution of the *Work* but not incorporated into the *Work*.

Value Added Taxes

Value Added Taxes means such sum as shall be levied upon the *Contract Price* by the Federal or any Provincial or Territorial Government and is computed as a percentage of the *Contract Price* and includes the Goods and Services Tax, the Quebec Sales Tax, the Harmonized Sales Tax, and any similar tax, the collection and payment of which have been imposed on the *Contractor* by tax legislation.

Work

The *Work* means the total construction and related services required by the *Contract Documents*.

Working Day

Working Day means a day other than a Saturday, Sunday, statutory holiday, or statutory vacation day that is observed by the construction industry in the area of the *Place of the Work*.

GENERAL CONDITIONS

PART 1 GENERAL PROVISIONS

GC 1.1 CONTRACT DOCUMENTS

- 1.1.1 The intent of the *Contract Documents* is to include the labour, *Products* and services necessary for the performance of the *Work* by the *Contractor* in accordance with these documents. It is not intended, however, that the *Contractor* shall supply products or perform work not consistent with, not covered by, or not properly inferable from the *Contract Documents*.
- 1.1.2 The *Contract Documents* are complementary, and what is required by one shall be as binding as if required by all. Performance by the *Contractor* shall be required only to the extent consistent with the *Contract Documents*.
- 1.1.3 The *Contractor* shall review the *Contract Documents* for the purpose of facilitating co-ordination and execution of the *Work* by the *Contractor*.
- 1.1.4 The *Contractor* is not responsible for errors, omissions or inconsistencies in the *Contract Documents*. If there are perceived errors, omissions or inconsistencies discovered by or made known to the *Contractor*, the *Contractor* shall promptly report to the *Consultant* and shall not proceed with the work affected until the *Contractor* has received corrected or additional information from the *Consultant*.
- 1.1.5 If there is a conflict within the *Contract Documents*:
- .1 the order of priority of documents, from highest to lowest, shall be
 - the Agreement between *Owner* and *Contractor*,
 - the Definitions,
 - Supplementary Conditions,
 - the General Conditions,
 - Division 01 of the *Specifications*,
 - technical *Specifications*,
 - material and finishing schedules,
 - the *Drawings*.
 - .2 *Drawings* of larger scale shall govern over those of smaller scale of the same date.
 - .3 dimensions shown on *Drawings* shall govern over dimensions scaled from *Drawings*.
 - .4 amended or later dated documents shall govern over earlier documents of the same type.
 - .5 noted materials and annotations shall govern over graphic indications.
- 1.1.6 Nothing contained in the *Contract Documents* shall create any contractual relationship between:
- .1 the *Owner* and a *Subcontractor*, a *Supplier*, or their agent, employee, or other person performing any portion of the *Work*.
 - .2 the *Consultant* and the *Contractor*, a *Subcontractor*, a *Supplier*, or their agent, employee, or other person performing any portion of the *Work*.
- 1.1.7 Words and abbreviations which have well known technical or trade meanings are used in the *Contract Documents* in accordance with such recognized meanings.
- 1.1.8 References in the *Contract Documents* to the singular shall be considered to include the plural as the context requires.
- 1.1.9 Neither the organization of the *Specifications* nor the arrangement of *Drawings* shall control the *Contractor* in dividing the work among *Subcontractors* and *Suppliers*.
- 1.1.10 *Specifications*, *Drawings*, models, and copies thereof furnished by the *Consultant* are and shall remain the *Consultant's* property, with the exception of the signed *Contract* sets, which shall belong to each party to the *Contract*. All *Specifications*, *Drawings* and models furnished by the *Consultant* are to be used only with respect to the *Work* and are not to be used on other work. These *Specifications*, *Drawings* and models are not to be copied or altered in any manner without the written authorization of the *Consultant*.
- 1.1.11 Physical models furnished by the *Contractor* at the *Owner's* expense are the property of the *Owner*.

GC 1.2 LAW OF THE CONTRACT

- 1.2.1 The law of the *Place of the Work* shall govern the interpretation of the *Contract*.

GC 1.3 RIGHTS AND REMEDIES

- 1.3.1 Except as expressly provided in the *Contract Documents*, the duties and obligations imposed by the *Contract Documents* and the rights and remedies available thereunder shall be in addition to and not a limitation of any duties, obligations, rights, and remedies otherwise imposed or available by law.

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

GC 1.4 ASSIGNMENT

- 1.4.1 Neither party to the *Contract* shall assign the *Contract* or a portion thereof without the written consent of the other, which consent shall not be unreasonably withheld.

PART 2 ADMINISTRATION OF THE CONTRACT

GC 2.1 AUTHORITY OF THE CONSULTANT

- 2.1.1 The *Consultant* will have authority to act on behalf of the *Owner* only to the extent provided in the *Contract Documents*, unless otherwise modified by written agreement as provided in paragraph 2.1.2.
- 2.1.2 The duties, responsibilities and limitations of authority of the *Consultant* as set forth in the *Contract Documents* shall be modified or extended only with the written consent of the *Owner*, the *Consultant* and the *Contractor*.

GC 2.2 ROLE OF THE CONSULTANT

- 2.2.1 The *Consultant* will provide administration of the *Contract* as described in the *Contract Documents*.
- 2.2.2 The *Consultant* will visit the *Place of the Work* at intervals appropriate to the progress of construction to become familiar with the progress and quality of the work and to determine if the *Work* is proceeding in general conformity with the *Contract Documents*.
- 2.2.3 If the *Owner* and the *Consultant* agree, the *Consultant* will provide at the *Place of the Work*, one or more project representatives to assist in carrying out the *Consultant's* responsibilities. The duties, responsibilities and limitations of authority of such project representatives shall be as set forth in writing to the *Contractor*.
- 2.2.4 Based on the *Consultant's* observations and evaluation of the *Contractor's* applications for payment, the *Consultant* will determine the amounts owing to the *Contractor* under the *Contract* and will issue certificates for payment as provided in Article A-5 of the Agreement – PAYMENT, GC 5.3 – PAYMENT and GC 5.5 – FINAL PAYMENT.
- 2.2.5 The *Consultant* will not be responsible for and will not have control, charge or supervision of construction means, methods, techniques, sequences, or procedures, or for safety precautions and programs required in connection with the *Work* in accordance with the applicable construction safety legislation, other regulations or general construction practice. The *Consultant* will not be responsible for the *Contractor's* failure to perform the *Work* in accordance with the *Contract Documents*.
- 2.2.6 Except with respect to GC 5.1 – FINANCING INFORMATION REQUIRED OF THE OWNER, the *Consultant* will be, in the first instance, the interpreter of the requirements of the *Contract Documents*.
- 2.2.7 Matters in question relating to the performance of the *Work* or the interpretation of the *Contract Documents* shall be initially referred in writing to the *Consultant* by the party raising the question for interpretations and findings and copied to the other party.
- 2.2.8 Interpretations and findings of the *Consultant* shall be consistent with the intent of the *Contract Documents*. In making such interpretations and findings the *Consultant* will not show partiality to either the *Owner* or the *Contractor*.
- 2.2.9 The *Consultant's* interpretations and findings will be given in writing to the parties within a reasonable time.
- 2.2.10 With respect to claims for a change in *Contract Price*, the *Consultant* will make findings as set out in GC 6.6 – CLAIMS FOR A CHANGE IN CONTRACT PRICE.
- 2.2.11 The *Consultant* will have authority to reject work which in the *Consultant's* opinion does not conform to the requirements of the *Contract Documents*. Whenever the *Consultant* considers it necessary or advisable, the *Consultant* will have authority to require inspection or testing of work, whether or not such work is fabricated, installed or completed. However, neither the authority of the *Consultant* to act nor any decision either to exercise or not to exercise such authority shall give rise to any duty or responsibility of the *Consultant* to the *Contractor*, *Subcontractors*, *Suppliers*, or their agents, employees, or other persons performing any of the *Work*.
- 2.2.12 During the progress of the *Work* the *Consultant* will furnish *Supplemental Instructions* to the *Contractor* with reasonable promptness or in accordance with a schedule for such instructions agreed to by the *Consultant* and the *Contractor*.
- 2.2.13 The *Consultant* will review and take appropriate action upon *Shop Drawings*, samples and other submittals by the *Contractor*, in accordance with the *Contract Documents*.

- 2.2.14 The *Consultant* will prepare *Change Orders* and *Change Directives* as provided in GC 6.2 – CHANGE ORDER and GC 6.3 – CHANGE DIRECTIVE.
- 2.2.15 The *Consultant* will conduct reviews of the *Work* to determine the date of *Substantial Performance of the Work* and verify that *Ready-for-Takeover* has been attained.
- 2.2.16 All certificates issued by the *Consultant* will be to the best of the *Consultant's* knowledge, information and belief. By issuing any certificate, the *Consultant* does not guarantee the *Work* is correct or complete.
- 2.2.17 The *Consultant* will receive and review written warranties and related documents required by the *Contract* and provided by the *Contractor* and will forward such warranties and documents to the *Owner* for the *Owner's* acceptance.
- 2.2.18 If the *Consultant's* engagement is terminated, the *Owner* shall immediately engage a *Consultant* against whom the *Contractor* makes no reasonable objection and whose duties and responsibilities under the *Contract Documents* will be that of the former *Consultant*.

GC 2.3 REVIEW AND INSPECTION OF THE WORK

- 2.3.1 The *Owner* and the *Consultant* shall have access to the *Work* at all times. The *Contractor* shall provide sufficient, safe and proper facilities at all times for the review of the *Work* by the *Consultant* and the inspection of the *Work* by authorized agencies. If parts of the *Work* are in preparation at locations other than the *Place of the Work*, the *Owner* and the *Consultant* shall be given access to such work whenever it is in progress.
- 2.3.2 If work is designated for tests, inspections or approvals in the *Contract Documents*, by the *Consultant's* instructions, or by the laws or ordinances of the *Place of the Work*, the *Contractor* shall give the *Consultant* reasonable notification of when the work will be ready for review and inspection. The *Contractor* shall arrange for and shall give the *Consultant* reasonable notification of the date and time of inspections by other authorities.
- 2.3.3 The *Contractor* shall furnish promptly to the *Consultant* two copies of certificates and inspection reports relating to the *Work*.
- 2.3.4 If the *Contractor* covers, or permits to be covered, work that has been designated for special tests, inspections or approvals before such special tests, inspections or approvals are made, given or completed, the *Contractor* shall, if so directed, uncover such work, have the inspections or tests satisfactorily completed, and make good covering work at the *Contractor's* expense.
- 2.3.5 The *Consultant* may order any portion or portions of the *Work* to be examined to confirm that such work is in accordance with the requirements of the *Contract Documents*. If the work is not in accordance with the requirements of the *Contract Documents*, the *Contractor* shall correct the work and pay the cost of examination and correction. If the work is in accordance with the requirements of the *Contract Documents*, the *Owner* shall pay the cost of examination and restoration.
- 2.3.6 The *Contractor* shall pay the cost of making any test or inspection, including the cost of samples required for such test or inspection, if such test or inspection is designated in the *Contract Documents* to be performed by the *Contractor* or is required by the laws or ordinances applicable to the *Place of the Work*.
- 2.3.7 The *Contractor* shall pay the cost of samples required for any test or inspection to be performed by others if such test or inspection is designated in the *Contract Documents*.

GC 2.4 DEFECTIVE WORK

- 2.4.1 The *Contractor* shall promptly correct defective work that has been rejected by the *Consultant* as failing to conform to the *Contract Documents* whether or not the defective work was incorporated in the *Work* or the defect is the result of poor workmanship, use of defective products or damage through carelessness or other act or omission of the *Contractor*.
- 2.4.2 The *Contractor* shall make good promptly *Other Contractors' work* destroyed or damaged by such corrections at the *Contractor's* expense.
- 2.4.3 If in the opinion of the *Consultant* it is not expedient to correct defective work or work not performed as provided in the *Contract Documents*, the *Owner* may deduct from the amount otherwise due to the *Contractor* the difference in value between the work as performed and that called for by the *Contract Documents*. If the *Owner* and the *Contractor* do not agree on the difference in value, they shall refer the matter to the *Consultant* for a finding.

PART 3 EXECUTION OF THE WORK

GC 3.1 CONTROL OF THE WORK

- 3.1.1 The *Contractor* shall have total control of the *Work* and shall effectively direct and supervise the *Work* so as to ensure conformity with the *Contract Documents*.

- 3.1.2 The *Contractor* shall be solely responsible for construction means, methods, techniques, sequences, and procedures and for co-ordinating the various parts of the *Work* under the *Contract*.

GC 3.2 CONSTRUCTION BY THE OWNER OR OTHER CONTRACTORS

- 3.2.1 The *Owner* reserves the right to award separate contracts in connection with other parts of the *Project* to *Other Contractors* and to perform work with own forces.
- 3.2.2 When separate contracts are awarded for other parts of the *Project*, or when work is performed by the *Owner*'s own forces, the *Owner* shall:
- .1 provide for the co-ordination of the activities and work of *Other Contractors* and the *Owner*'s own forces with the *Work* of the *Contract*;
 - .2 enter into separate contracts with *Other Contractors* under conditions of contract which are compatible with the conditions of the *Contract*;
 - .3 ensure that insurance coverage is provided to the same requirements as are called for in GC 11.1 – INSURANCE and co-ordinate such insurance with the insurance coverage of the *Contractor* as it affects the *Work*; and
 - .4 take all reasonable precautions to avoid labour disputes or other disputes on the *Project* arising from the work of *Other Contractors* or the *Owner*'s own forces.
- 3.2.3 When separate contracts are awarded for other parts of the *Project*, or when work is performed by the *Owner*'s own forces, the *Contractor* shall:
- .1 afford the *Owner* and *Other Contractors* reasonable opportunity to store their products and execute their work;
 - .2 co-ordinate and schedule the *Work* with the work of *Other Contractors* or the *Owner*'s own forces that are identified in the *Contract Documents*;
 - .3 participate with *Other Contractors* and the *Owner* in reviewing their construction schedules when directed to do so; and
 - .4 report promptly to the *Consultant* in writing any apparent deficiencies in the work of *Other Contractors* or of the *Owner*'s own forces, where such work affects the proper execution of any portion of the *Work*, prior to proceeding with that portion of the *Work*.
- 3.2.4 Where a change in the *Work* is required as a result of the co-ordination and integration of the work of *Other Contractors* or *Owner*'s own forces with the *Work*, the changes shall be authorized and valued as provided in GC 6.1 – OWNER'S RIGHT TO MAKE CHANGES, GC 6.2 – CHANGE ORDER and GC 6.3 – CHANGE DIRECTIVE.
- 3.2.5 Disputes and other matters in question between the *Contractor* and *Other Contractors* shall be dealt with as provided in Part 8 of the General Conditions – DISPUTE RESOLUTION provided the *Other Contractors* have reciprocal obligations. The *Contractor* shall be deemed to have consented to arbitration of any dispute with any *Other Contractor* whose contract with the *Owner* contains a similar agreement to arbitrate. In the absence of *Other Contractors* having reciprocal obligations, disputes and other matters in question initiated by the *Contractor* against *Other Contractors* will be considered disputes and other matters in question between the *Contractor* and the *Owner*.
- 3.2.6 Should the *Owner*, the *Consultant*, *Other Contractors*, or anyone employed by them directly or indirectly be responsible for ill-timed work necessitating cutting or remedial work to be performed, the cost of such cutting or remedial work shall be valued as provided in GC 6.1 – OWNER'S RIGHT TO MAKE CHANGES, GC 6.2 – CHANGE ORDER and GC 6.3 – CHANGE DIRECTIVE.

GC 3.3 TEMPORARY WORK

- 3.3.1 The *Contractor* shall have the sole responsibility for the design, erection, operation, maintenance, and removal of *Temporary Work* unless otherwise specified in the *Contract Documents*.
- 3.3.2 The *Contractor* shall engage and pay for registered professional engineering personnel skilled in the appropriate disciplines to perform those functions referred to in paragraph 3.3.1 where required by law or by the *Contract Documents* and in all cases where such *Temporary Work* is of such a nature that professional engineering skill is required to produce safe and satisfactory results.
- 3.3.3 Notwithstanding the provisions of GC 3.1 – CONTROL OF THE WORK, paragraphs 3.3.1 and 3.3.2 or provisions to the contrary elsewhere in the *Contract Documents* where such *Contract Documents* include designs for *Temporary Work* or specify a method of construction in whole or in part, such designs or methods of construction shall be considered to be part of the design of the *Work* and the *Contractor* shall not be held responsible for that part of the design or the specified method of construction. The *Contractor* shall, however, be responsible for the execution of such design or specified method of construction in the same manner as for the execution of the *Work*.

GC 3.4 CONSTRUCTION SCHEDULE

3.4.1 The *Contractor* shall:

- .1 prepare and submit to the *Owner* and the *Consultant* prior to the first application for payment, a construction schedule that indicates the timing of the major activities of the *Work* and provides sufficient detail of the critical events and their inter-relationship to demonstrate the *Work* will be performed in conformity with the *Contract Time*;
- .2 monitor the progress of the *Work* relative to the construction schedule and update the schedule on a monthly basis or as stipulated by the *Contract Documents*; and
- .3 advise the *Consultant* of any revisions required to the schedule as the result of extensions of the *Contract Time* as provided in Part 6 of the General Conditions – CHANGES IN THE WORK.

GC 3.5 SUPERVISION

3.5.1 The *Contractor* shall provide all necessary supervision and appoint a competent representative who shall be in attendance at the *Place of the Work* while the *Work* is being performed. The appointed representative shall not be changed except for valid reason.

3.5.2 The appointed representative shall represent the *Contractor* at the *Place of the Work*. Information and instructions provided by the *Consultant* to the *Contractor's* appointed representative shall be deemed to have been received by the *Contractor*, except with respect to Article A-6 of the Agreement – RECEIPT OF AND ADDRESSES FOR NOTICES IN WRITING.

GC 3.6 SUBCONTRACTORS AND SUPPLIERS

3.6.1 The *Contractor* shall preserve and protect the rights of the parties under the *Contract* with respect to work to be performed under subcontract, and shall:

- .1 enter into contracts or written agreements with *Subcontractors* and *Suppliers* to require them to perform their work as provided in the *Contract Documents*;
- .2 incorporate the applicable terms and conditions of the *Contract Documents* into all contracts or written agreements with *Subcontractors* and *Suppliers*; and
- .3 be as fully responsible to the *Owner* for acts and omissions of *Subcontractors*, *Suppliers* and any persons directly or indirectly employed by them as for acts and omissions of persons directly employed by the *Contractor*.

3.6.2 The *Contractor* shall indicate in writing, if requested by the *Owner*, those *Subcontractors* or *Suppliers* whose bids have been received by the *Contractor* which the *Contractor* would be prepared to accept for the performance of a portion of the *Work*. Should the *Owner* not object before signing the *Contract*, the *Contractor* shall employ those *Subcontractors* or *Suppliers* so identified by the *Contractor* in writing for the performance of that portion of the *Work* to which their bid applies.

3.6.3 The *Owner* may, for reasonable cause, at any time before the *Owner* has signed the *Contract*, object to the use of a proposed *Subcontractor* or *Supplier* and require the *Contractor* to employ one of the other subcontract bidders.

3.6.4 If the *Owner* requires the *Contractor* to change a proposed *Subcontractor* or *Supplier*, the *Contract Price* and *Contract Time* shall be adjusted by the difference occasioned by such required change.

3.6.5 The *Contractor* shall not be required to employ as a *Subcontractor* or *Supplier*, a person or firm to which the *Contractor* may reasonably object.

3.6.6 The *Owner*, through the *Consultant*, may provide to a *Subcontractor* or *Supplier* information as to the percentage of the *Subcontractor's* or *Supplier's* work which has been certified for payment.

GC 3.7 LABOUR AND PRODUCTS

3.7.1 The *Contractor* shall maintain good order and discipline among the *Contractor's* employees engaged on the *Work* and employ only workers that are skilled in the tasks assigned.

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

3.7.3 Unless otherwise specified in the *Contract Documents*, *Products* provided shall be new. *Products* which are not specified shall be of a quality consistent with those specified and their use acceptable to the *Consultant*.

GC 3.8 SHOP DRAWINGS

3.8.1 The *Contractor* shall provide *Shop Drawings* as required in the *Contract Documents*.

3.8.2 The *Contractor* shall provide *Shop Drawings* to the *Consultant* to review in accordance with an agreed schedule, or in the absence of an agreed schedule, in orderly sequence and sufficiently in advance so as to cause no delay in the *Work* or in the work of *Other Contractors* or the *Owner's* own forces.

- 3.8.3 The *Contractor* shall review all *Shop Drawings* before providing them to the *Consultant*. The *Contractor* represents by this review that:
- .1 the *Contractor* has determined and verified all applicable field measurements, field construction conditions, *Product* requirements, catalogue numbers and similar data, or will do so, and
 - .2 the *Contractor* has checked and co-ordinated each *Shop Drawing* with the requirements of the *Work* and of the *Contract Documents*.
- 3.8.4 The *Consultant's* review is for conformity to the design concept and for general arrangement only.
- 3.8.5 At the time of providing *Shop Drawings*, the *Contractor* shall expressly advise the *Consultant* in writing of any deviations in a *Shop Drawing* from the requirements of the *Contract Documents*. The *Consultant* shall indicate the acceptance or rejection of such deviation expressly in writing.
- 3.8.6 The *Consultant's* review shall not relieve the *Contractor* of responsibility for errors or omissions in the *Shop Drawings* or for meeting all requirements of the *Contract Documents*.
- 3.8.7 The *Consultant* will review and return *Shop Drawings* in accordance with the schedule agreed upon, or, in the absence of such schedule, with reasonable promptness so as to cause no delay in the performance of the *Work*.

PART 4 ALLOWANCES

GC 4.1 CASH ALLOWANCES

- 4.1.1 The *Contract Price* includes the cash allowances, if any, stated in the *Contract Documents*. The scope of the *Work* or costs included in such cash allowances shall be as described in the *Contract Documents*.
- 4.1.2 The *Contract Price*, and not the cash allowances, includes the *Contractor's* overhead and profit in connection with such cash allowances.
- 4.1.3 Expenditures under cash allowances shall be authorized by the *Owner* through the *Consultant*.
- 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*.
- 4.1.5 The net amount of any unexpended cash allowances, after providing for any reallocations as contemplated in paragraph 4.1.4, shall be deducted from the *Contract Price* by *Change Order* without any adjustment for the *Contractor's* overhead and profit on such amount.
- 4.1.6 The value of the *Work* performed under a cash allowance is eligible to be included in progress payments.
- 4.1.7 The *Contractor* and the *Consultant* shall jointly prepare a schedule that shows when the items called for under cash allowances must be ordered to avoid delaying the progress of the *Work*.

GC 4.2 CONTINGENCY ALLOWANCE

- 4.2.1 The *Contract Price* includes the contingency allowance, if any, stated in the *Contract Documents*.
- 4.2.2 The contingency allowance includes the *Contractor's* overhead and profit in connection with such contingency allowance.
- 4.2.3 Expenditures under the contingency allowance shall be authorized and valued as provided in GC 6.1 – OWNER'S RIGHT TO MAKE CHANGES, GC 6.2 – CHANGE ORDER and GC 6.3 – CHANGE DIRECTIVE.
- 4.2.4 The *Contract Price* shall be adjusted by *Change Order* to provide for any difference between the expenditures authorized under paragraph 4.2.3 and the contingency allowance.

PART 5 PAYMENT

GC 5.1 FINANCING INFORMATION REQUIRED OF THE OWNER

- 5.1.1 The *Owner* shall, at the request of the *Contractor*, before signing the *Contract*, and promptly from time to time thereafter, furnish to the *Contractor* reasonable evidence that financial arrangements have been made to fulfill the *Owner's* obligations under the *Contract*.
- 5.1.2 The *Owner* shall give the *Contractor Notice in Writing* of any material change in the *Owner's* financial arrangements to fulfil the *Owner's* obligations under the *Contract* during the performance of the *Contract*.

GC 5.2 APPLICATIONS FOR PAYMENT

- 5.2.1 Applications for payment on account as provided in Article A-5 of the Agreement – PAYMENT shall be submitted monthly to the *Owner* and the *Consultant* simultaneously as the *Work* progresses.
- 5.2.2 Applications for payment shall be dated the last day of each payment period, which is the last day of the month or an alternative day of the month agreed in writing by the parties.
- 5.2.3 The amount claimed shall be for the value, proportionate to the amount of the *Contract*, of *Work* performed and *Products* delivered to the *Place of the Work* as of the last day of the payment period.
- 5.2.4 The *Contractor* shall submit to the *Consultant*, at least 15 calendar days before the first application for payment, a schedule of values for the parts of the *Work*, aggregating the total amount of the *Contract Price*, so as to facilitate evaluation of applications for payment.
- 5.2.5 The schedule of values shall be made out in such form as specified in the *Contract* and supported by such evidence as the *Consultant* may reasonably require.
- 5.2.6 Applications for payment shall be based on the schedule of values accepted by the *Consultant* and shall comply with the provisions of *Payment Legislation*.
- 5.2.7 Each application for payment shall include evidence of compliance with workers' compensation legislation at the *Place of the Work* and after the first payment, a declaration by the *Contractor* as to the distribution made of the amounts previously received using document CCDC 9A 'Statutory Declaration'.
- 5.2.8 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*.

GC 5.3 PAYMENT

- 5.3.1 After receipt by the *Consultant* and the *Owner* of an application for payment submitted by the *Contractor* in accordance with GC 5.2 – APPLICATIONS FOR PAYMENT:
 - .1 The *Consultant* will issue to the *Owner* and copy to the *Contractor*, no later than 10 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* certifies a different amount, or rejects the application or part thereof, the *Owner* shall promptly issue a written notice to the *Contractor* giving reasons for the revision or rejection, such written notice to be in compliance with *Payment Legislation*.
 - .2 The *Owner* shall make payment to the *Contractor* on account as provided in Article A-5 of the Agreement – PAYMENT on or before 28 calendar days after the receipt by the *Owner* and the *Consultant* of the application for payment, and in any event, in compliance with *Payment Legislation*.

GC 5.4 SUBSTANTIAL PERFORMANCE OF THE WORK AND PAYMENT OF HOLDBACK

- 5.4.1 The *Consultant* will review the *Work* to certify or verify the validity of the application for *Substantial Performance of the Work* and will promptly, and in any event, no later than 20 calendar days after receipt of the *Contractors* application:
 - .1 advise the *Contractor* in writing that the *Work* or the designated portion of the *Work* is not substantially performed and give reasons why, or
 - .2 state the date of *Substantial Performance of the Work* or a designated portion of the *Work* in a certificate and issue a copy of that certificate to each of the *Owner* and the *Contractor*.
- 5.4.2 Where the holdback amount required by the applicable lien legislation has not been placed in a separate lien holdback account, the *Owner* shall, no later than 10 calendar days prior to the expiry of the holdback period stipulated in the lien legislation applicable to the *Place of the Work*, place the holdback amount in a bank account in the joint names of the *Owner* and the *Contractor*.
- 5.4.3 Subject to the requirements of any *Payment Legislation*, all holdback amount prescribed by the applicable lien legislation for the *Work* shall become due and payable to the *Contractor* no later than 10 *Working Days* following the expiration of the holdback period stipulated in the lien legislation applicable to the *Place of the Work*.
- 5.4.4 The *Contractor* shall submit an application for payment of the lien holdback amount in accordance with GC 5.3 – PAYMENT.
- 5.4.5 Where legislation permits progressive release of the holdback for a portion of the *Work* and the *Consultant* has certified or verified that the part of the *Work* has been performed prior to *Substantial Performance of the Work*, the *Owner* hereby agrees to release, and shall release, such portion to the *Contractor* in accordance with such legislation.

- 5.4.6 Notwithstanding any progressive release of the holdback, the *Contractor* shall ensure that such parts of the *Work* are protected pending the issuance of a final certificate for payment and be responsible for the correction of defects or work not performed regardless of whether or not such was apparent when the holdback was released.

GC 5.5 FINAL PAYMENT

- 5.5.1 When the *Contractor* considers that the *Work* is completed, the *Contractor* shall submit an application for final payment.
- 5.5.2 The *Consultant* will, no later than 10 calendar days after the receipt of an application from the *Contractor* for final payment, review the *Work* to verify the validity of the application and when the *Consultant* finds the *Contractor's* application for final payment valid, the *Consultant* will promptly issue a final certificate for payment to the *Owner*, with a copy to the *Contractor*.
- 5.5.3 If the *Consultant* rejects the application or part thereof, the *Owner* will promptly issue a written notice to the *Contractor* giving reasons for the revision or rejection, such written notice to be in compliance with *Payment Legislation*.
- 5.5.4 Subject to the provision of paragraph 10.4.1 of GC 10.4 – WORKERS' COMPENSATION, and any legislation applicable to the *Place of the Work*, the *Owner* shall, no later than 5 calendar days after the issuance of a final certificate for payment, pay the *Contractor* as provided in Article A-5 of the Agreement – PAYMENT and in any event, in compliance with *Payment Legislation*.

GC 5.6 DEFERRED WORK

- 5.6.1 If because of climatic or other conditions reasonably beyond the control of the *Contractor*, or if the *Owner* and the *Contractor* agree that, there are items of work that must be deferred, payment in full for that portion of the *Work* which has been performed as certified by the *Consultant* shall not be withheld or delayed by the *Owner* on account thereof, but the *Owner* may withhold, until the remaining portion of the *Work* is finished, only such an amount that the *Consultant* determines is sufficient and reasonable to cover the cost of performing such deferred *Work*.

GC 5.7 NON-CONFORMING WORK

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

PART 6 CHANGES IN THE WORK

GC 6.1 OWNER'S RIGHT TO MAKE CHANGES

- 6.1.1 The *Owner*, through the *Consultant*, without invalidating the *Contract*, may make:
- .1 changes in the *Work* consisting of additions, deletions or other revisions to the *Work* by *Change Order* or *Change Directive*, and
 - .2 changes to the *Contract Time* for the *Work*, or any part thereof, by *Change Order*.
- 6.1.2 The *Contractor* shall not perform a change in the *Work* without a *Change Order* or a *Change Directive*.

GC 6.2 CHANGE ORDER

- 6.2.1 When a change in the *Work* is proposed or required, the *Consultant* will provide the *Contractor* with a written description of the proposed change in the *Work*. The *Contractor* shall promptly present to the *Consultant*, in a form that can be reasonably evaluated, a method of adjustment or an amount of adjustment for the *Contract Price*, if any, and the adjustment in the *Contract Time*, if any, for the proposed change in the *Work*.
- 6.2.2 When the *Owner* and the *Contractor* agree to the adjustments in the *Contract Price* and *Contract Time* or to the method to be used to determine the adjustments, such agreement shall be effective immediately and shall be recorded in a *Change Order*. The value of the work performed as the result of a *Change Order* shall be included in the applications for progress payment.

GC 6.3 CHANGE DIRECTIVE

- 6.3.1 If the *Owner* requires the *Contractor* to proceed with a change in the *Work* prior to the *Owner* and the *Contractor* agreeing upon the corresponding adjustment in *Contract Price* and *Contract Time*, the *Owner*, through the *Consultant*, shall issue a *Change Directive*.
- 6.3.2 A *Change Directive* shall only be used to direct a change in the *Work* which is within the general scope of the *Contract Documents*.
- 6.3.3 A *Change Directive* shall not be used to direct a change in the *Contract Time* only.

- 6.3.4 Upon receipt of a *Change Directive*, the *Contractor* shall proceed promptly with the change in the *Work*.
- 6.3.5 For the purpose of valuing *Change Directives*, changes in the *Work* that are not substitutions or otherwise related to each other shall not be grouped together in the same *Change Directive*.
- 6.3.6 The adjustment in the *Contract Price* for a change carried out by way of a *Change Directive* shall be determined on the basis of the cost of the *Contractor's* actual expenditures and savings attributable to the *Change Directive*, valued in accordance with paragraph 6.3.7 and as follows:
- 1 If the change results in a net increase in the *Contractor's* cost, the *Contract Price* shall be increased by the amount of the net increase in the *Contractor's* cost, plus the *Contractor's* percentage fee on such net increase.
 - 2 If the change results in a net decrease in the *Contractor's* cost, the *Contract Price* shall be decreased by the amount of the net decrease in the *Contractor's* cost, without adjustment for the *Contractor's* percentage fee.
 - 3 The *Contractor's* fee shall be as specified in the *Contract Documents* or as otherwise agreed by the parties.
- 6.3.7 The cost of performing the work attributable to the *Change Directive* shall be limited to the actual cost of the following in as much as it contributes directly to the implementation of the *Change Directive*:

Labour

- 1 rates that are listed in the schedule or as agreed by the *Owner* and the *Contractor* including wages, benefits, compensation, contributions, assessments, or taxes incurred for such items as employment insurance, provincial or territorial health insurance, workers' compensation, and Canada or Quebec Pension Plan for:
 - (1) trade labour in the direct employ of the *Contractor*;
 - (2) the *Contractor's* personnel when stationed at the field office;
 - (3) the *Contractor's* personnel engaged at shops or on the road, in expediting the production or transportation of materials or equipment; and
 - (4) the *Contractor's* office personnel engaged in a technical capacity, or other personnel identified in Article A-3 of the Agreement – CONTRACT DOCUMENTS for the time spent in the performance of the *Work*;

Products, Construction Equipment and Temporary Work

- 2 cost of all *Products* including cost of transportation thereof;
- 3 in the absence of agreed rates, cost less salvage value of *Construction Equipment*, *Temporary Work* and tools, exclusive of hand tools under \$1,000 owned by the *Contractor*;
- 4 rental cost of *Construction Equipment*, *Temporary Work* and tools, exclusive of hand tools under \$1,000;
- 5 cost of all equipment and services required for the *Contractor's* field office;

Subcontract

- 6 subcontract amounts of Subcontractor with pricing mechanism approved by the *Owner*;

Others

- 7 travel and subsistence expenses of the *Contractor's* personnel described in paragraph 6.3.7.1;
- 8 deposits lost provided that they are not caused by negligent acts or omissions of the *Contractor*;
- 9 cost of quality assurance such as independent inspection and testing services;
- 10 charges levied by authorities having jurisdiction at the *Place of the Work*;
- 11 royalties, patent license fees, and damages for infringement of patents and cost of defending suits therefor subject always to the *Contractor's* obligations to indemnify the *Owner* as provided in paragraph 10.3.1 of GC 10.3 – PATENT FEES;
- 12 premium for all contract securities and insurance for which the *Contractor* is required, by the *Contract Documents*, to provide, maintain and pay in relation to the performance of the *Work*;
- 13 losses and expenses sustained by the *Contractor* for matters which are the subject of insurance under the policies prescribed in GC 11.1 – INSURANCE when such losses and expenses are not recoverable because the amounts are in excess of collectible amounts or within the deductible amounts;
- 14 taxes and duties, other than *Value Added Taxes*, income, capital, or property taxes, relating to the *Work* for which the *Contractor* is liable;
- 15 charges for voice and data communications, courier services, expressage, transmittal and reproduction of documents, and petty cash items;
- 16 cost for removal and disposal of waste products and debris;
- 17 legal costs, incurred by the *Contractor*, in relation to the performance of the *Work* provided that they are not:
 - (1) relating to a dispute between the *Owner* and the *Contractor* unless such costs are part of a settlement or awarded by arbitration or court,
 - (2) the result of the negligent acts or omissions of the *Contractor*, or
 - (3) the result of a breach of this *Contract* by the *Contractor*;
- 18 cost of auditing when requested by the *Owner*; and
- 19 cost of *Project* specific information technology in accordance with the method determined by the parties.

- 6.3.8 Notwithstanding any other provisions contained in the General Conditions of the *Contract*, it is the intention of the parties that the cost of any item under any cost element referred to in paragraph 6.3.7 shall cover and include any and all costs or liabilities attributable to the *Change Directive* other than those which are the result of or occasioned by any failure on the part of the *Contractor* to exercise reasonable care and diligence in the *Contractor's* attention to the *Work*. Any cost due to failure on the part of the *Contractor* to exercise reasonable care and diligence in the *Contractor's* performance of the *Work* attributable to the *Change Directive* shall be borne by the *Contractor*.
- 6.3.9 The *Contractor* shall keep full and detailed accounts and records necessary for the documentation of the cost of performing the *Work* attributable to the *Change Directive* and shall provide the *Consultant* with copies thereof.
- 6.3.10 For the purpose of valuing *Change Directives*, the *Owner* shall be afforded reasonable access to all of the *Contractor's* pertinent documents related to the cost of performing the *Work* attributable to the *Change Directive*.
- 6.3.11 Pending determination of the final amount of a *Change Directive*, the undisputed value of the *Work* performed as the result of a *Change Directive* is eligible to be included in progress payments.
- 6.3.12 If the *Owner* and the *Contractor* do not agree on the proposed adjustment in the *Contract Time* attributable to the change in the *Work*, or the method of determining it, the adjustment shall be referred to the *Consultant* for a finding.
- 6.3.13 When the *Owner* and the *Contractor* reach agreement on the adjustment to the *Contract Price* and to the *Contract Time*, this agreement shall be recorded in a *Change Order*.

GC 6.4 CONCEALED OR UNKNOWN CONDITIONS

- 6.4.1 If the *Owner* or the *Contractor* discover conditions at the *Place of the Work* which are:
- .1 subsurface or otherwise concealed physical conditions which existed before the commencement of the *Work* and differ materially from those indicated in the *Contract Documents*; or
 - .2 physical conditions, other than conditions due to weather, that are of a nature which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the *Contract Documents*,
- then the observing party shall give *Notice in Writing* to the other party of such conditions before they are disturbed and in no event later than 5 *Working Days* after first observance of the conditions.
- 6.4.2 The *Consultant* will promptly investigate such conditions and make a finding. If the finding is that the conditions differ materially and this would cause an increase or decrease in the *Contractor's* cost or time to perform the *Work*, the *Owner*, through the *Consultant*, shall issue appropriate instructions for a change in the *Work* as provided in GC 6.2 – CHANGE ORDER or GC 6.3 – CHANGE DIRECTIVE.
- 6.4.3 If the *Consultant* finds that the conditions at the *Place of the Work* are not materially different or that no change in the *Contract Price* or the *Contract Time* is justified, the *Consultant* will promptly inform the *Owner* and the *Contractor* in writing.
- 6.4.4 If such concealed or unknown conditions relate to toxic and hazardous substances and materials, artifacts and fossils, or mould, the parties will be governed by the provisions of GC 9.2 – TOXIC AND HAZARDOUS SUBSTANCES, GC 9.3 – ARTIFACTS AND FOSSILS and GC 9.5 – MOULD.

GC 6.5 DELAYS

- 6.5.1 If the *Contractor* is delayed in the performance of the *Work* by the *Owner*, the *Consultant*, or anyone employed or engaged by them directly or indirectly, contrary to the provisions of the *Contract Documents*, then the *Contract Time* shall be extended for such reasonable time as the *Consultant* may recommend in consultation with the *Contractor*. The *Contractor* shall be reimbursed by the *Owner* for reasonable costs incurred by the *Contractor* as the result of such delay.
- 6.5.2 If the *Contractor* is delayed in the performance of the *Work* by a stop work order issued by a court or other public authority and providing that such order was not issued as the result of an act or fault of the *Contractor* or any person employed or engaged by the *Contractor* directly or indirectly, resulting in the failure of the *Contractor* to attain *Ready-for-Takeover* by the date stipulated in Article A-1 of the Agreement – THE WORK, then the *Contract Time* shall be extended for such reasonable time as the *Consultant* may recommend in consultation with the *Contractor*. The *Contractor* shall be reimbursed by the *Owner* for reasonable costs incurred by the *Contractor* as the result of such delay.
- 6.5.3 If the *Contractor* is delayed in the performance of the *Work* by:
- .1 labour disputes, strikes, lock-outs (including lock-outs decreed or recommended for its members by a recognized contractors' association, of which the *Contractor* is a member or to which the *Contractor* is otherwise bound),
 - .2 fire, unusual delay by common carriers or unavoidable casualties,
 - .3 abnormally adverse weather conditions, or

- .4 any cause beyond the *Contractor's* control other than one resulting from a default or breach of *Contract* by the *Contractor*, then 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 the 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 actions by the *Owner*, the *Consultant* or anyone employed or engaged by them directly or indirectly.
- 6.5.4 No extension shall be made for delay unless *Notice in Writing* of the cause of delay is given to the *Consultant* not later than 10 *Working Days* after the commencement of the delay. In the case of a continuing cause of delay only one *Notice in Writing* shall be necessary.
- 6.5.5 If no schedule is made under paragraph 2.2.12 of GC 2.2 – ROLE OF THE CONSULTANT, then no request for extension shall be made because of failure of the *Consultant* to furnish instructions until 10 *Working Days* after demand for such instructions has been made.

GC 6.6 CLAIMS FOR A CHANGE IN CONTRACT PRICE

- 6.6.1 If the *Contractor* intends to make a claim for an increase to the *Contract Price*, or if the *Owner* intends to make a claim against the *Contractor* for a credit to the *Contract Price*, the party that intends to make the claim shall give timely *Notice in Writing* of intent to claim to the other party and to the *Consultant*.
- 6.6.2 Upon commencement of the event or series of events giving rise to a claim, the party intending to make the claim shall:
- .1 take all reasonable measures to mitigate any loss or expense which may be incurred as a result of such event or series of events, and
 - .2 keep such records as may be necessary to support the claim.
- 6.6.3 The party making the claim shall submit within a reasonable time to the *Consultant* a detailed account of the amount claimed and the grounds upon which the claim is based and the *Consultant* will make a finding upon such claim.
- 6.6.4 Where the event or series of events giving rise to the claim has a continuing effect, the detailed account submitted under paragraph 6.6.3 shall be considered to be an interim account and the party making the claim shall, at such intervals as the *Consultant* may reasonably require, submit further interim accounts 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.
- 6.6.5 The *Consultant's* findings, with respect to a claim made by either party, will be given by *Notice in Writing* to both parties within 30 *Working Days* after receipt of the claim by the *Consultant*, or within such other time period as may be agreed by the parties.
- 6.6.6 If such finding is not acceptable to either party, the claim shall be settled in accordance with Part 8 of the General Conditions – DISPUTE RESOLUTION.

PART 7 DEFAULT NOTICE

GC 7.1 OWNER'S RIGHT TO PERFORM THE WORK, TERMINATE THE CONTRACTOR'S RIGHT TO CONTINUE WITH THE WORK OR TERMINATE THE CONTRACT

- 7.1.1 If the *Contractor* is adjudged bankrupt, or makes a general assignment for the benefit of creditors because of the *Contractor's* insolvency, or if a receiver is appointed because of the *Contractor's* insolvency, the *Owner* may, without prejudice to any other right or remedy the *Owner* may have, terminate the *Contractor's* right to continue with the *Work*, by giving the *Contractor* or receiver or trustee in bankruptcy *Notice in Writing* to that effect.
- 7.1.2 If the *Contractor* neglects to perform the *Work* properly or otherwise fails to comply with the requirements of the *Contract* to a substantial degree and if the *Consultant* has given a written statement to the *Owner* and *Contractor* which provides the detail of such neglect to perform the *Work* properly or such failure to comply with the requirements of the *Contract* to a substantial degree, the *Owner* may, without prejudice to any other right or remedy the *Owner* may have, give the *Contractor Notice in Writing*, containing particulars of the default including references to applicable provisions of the *Contract*, that the *Contractor* is in default of the *Contractor's* contractual obligations and instruct the *Contractor* to correct the default in the 5 *Working Days* immediately following the receipt of such *Notice in Writing*.
- 7.1.3 If the default cannot be corrected in the 5 *Working Days* specified or in such other time period as may be subsequently agreed in writing by the parties, the *Contractor* shall be in compliance with the *Owner's* instructions if the *Contractor*:
- .1 commences the correction of the default within the specified time,
 - .2 provides the *Owner* with an acceptable schedule for such correction, and
 - .3 corrects the default in accordance with the *Contract* terms and with such schedule.

- 7.1.4 If the *Contractor* fails to correct the default in the time specified or in such other time period as may be subsequently agreed in writing by the parties, without prejudice to any other right or remedy the *Owner* may have, the *Owner* may by giving *Notice in Writing*:
- .1 correct such default and deduct the cost thereof from any payment then or thereafter due the *Contractor* for the *Work* provided the *Consultant* has certified such cost to the *Owner* and the *Contractor*, or
 - .2 terminate the *Contractor*'s right to continue with the *Work* in whole or in part or terminate the *Contract*.
- 7.1.5 If the *Owner* terminates the *Contractor*'s right to continue with the *Work* as provided in paragraphs 7.1.1 and 7.1.4, the *Owner* shall be entitled to:
- .1 take possession of the *Work* and *Products* at the *Place of the Work*; subject to the rights of third parties, utilize the *Construction Equipment* at the *Place of the Work*; finish the *Work* by whatever method the *Owner* may consider expedient, but without undue delay or expense,
 - .2 withhold further payment to the *Contractor* until a final certificate for payment is issued,
 - .3 charge the *Contractor* the amount by which the full cost of finishing the *Work* as certified by the *Consultant*, including compensation to the *Consultant* for the *Consultant*'s additional services and a reasonable allowance as determined by the *Consultant* to cover the cost of corrections to work performed by the *Contractor* that may be required under GC 12.3 – WARRANTY, exceeds the unpaid balance of the *Contract Price*; however, if such cost of finishing the *Work* is less than the unpaid balance of the *Contract Price*, the *Owner* shall pay the *Contractor* the difference, and
 - .4 on expiry of the warranty period, charge the *Contractor* the amount by which the cost of corrections to the *Contractor*'s work under GC 12.3 – WARRANTY exceeds the allowance provided for such corrections, or if the cost of such corrections is less than the allowance, pay the *Contractor* the difference.
- 7.1.6 The *Contractor*'s obligation under the *Contract* as to quality, correction and warranty of the work performed by the *Contractor* up to the time of termination shall continue in force after such termination of the *Contract*.

GC 7.2 CONTRACTOR'S RIGHT TO SUSPEND THE WORK OR TERMINATE THE CONTRACT

- 7.2.1 If the *Owner* is adjudged bankrupt, or makes a general assignment for the benefit of creditors because of the *Owner*'s insolvency, or if a receiver is appointed because of the *Owner*'s insolvency, the *Contractor* may, without prejudice to any other right or remedy the *Contractor* may have, terminate the *Contract* by giving the *Owner* or receiver or trustee in bankruptcy *Notice in Writing* to that effect.
- 7.2.2 If the *Work* is suspended or otherwise delayed for a period of 20 *Working Days* or more under an order of a court or other public authority and providing that such order was not issued as the result of an act or fault of the *Contractor* or of anyone directly or indirectly employed or engaged by the *Contractor*, the *Contractor* may, without prejudice to any other right or remedy the *Contractor* may have, terminate the *Contract* by giving the *Owner* *Notice in Writing* to that effect.
- 7.2.3 The *Contractor* may give *Notice in Writing* to the *Owner*, with a copy to the *Consultant*, that the *Owner* is in default of the *Owner*'s contractual obligations if:
- .1 the *Owner* fails to furnish, when so requested by the *Contractor*, reasonable evidence that financial arrangements have been made to fulfill the *Owner*'s obligations under the *Contract*,
 - .2 the *Consultant* fails to issue a certificate as provided in Part 5 of the General Conditions – PAYMENT,
 - .3 the *Owner* fails to pay the *Contractor* when due the amounts certified by the *Consultant* or awarded by adjudication, arbitration or court, or
 - .4 the *Owner* fails to comply with the requirements of the *Contract* to a substantial degree and the *Consultant*, except for GC 5.1 – FINANCING INFORMATION REQUIRED OF THE OWNER, gives a written statement to the *Owner* and the *Contractor* that provides detail of such failure to comply with the requirements of the *Contract* to a substantial degree.
- 7.2.4 The *Contractor*'s *Notice in Writing* to the *Owner* provided under paragraph 7.2.3 shall advise that if the default is not corrected within 5 *Working Days* following the receipt of the *Notice in Writing*, the *Contractor* may, without prejudice to any other right or remedy the *Contractor* may have, suspend the *Work* or terminate the *Contract*.
- 7.2.5 If the *Contractor* terminates the *Contract* by giving a *Notice in Writing* to the *Owner* under the conditions set out above, the *Contractor* shall be entitled to be paid for all work performed 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*.

PART 8 DISPUTE RESOLUTION

GC 8.1 AUTHORITY OF THE CONSULTANT

- 8.1.1 Differences between the parties to the *Contract* as to the interpretation, application or administration of the *Contract* or any failure to agree where agreement between the parties is called for, herein collectively called disputes, which are not resolved

in the first instance by findings of the *Consultant* as provided in GC 2.2 – ROLE OF THE CONSULTANT, shall be settled in accordance with the requirements of Part 8 of the General Conditions – DISPUTE RESOLUTION.

- 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, the procedures set out in paragraph 8.1.3 and paragraphs 8.3.3 to 8.3.8 of GC 8.3 – NEGOTIATION, MEDIATION AND ARBITRATION, and in GC 8.4 – RETENTION OF RIGHTS apply to that dispute with the necessary changes to detail as may be required.
- 8.1.3 If a dispute is not resolved promptly, the *Consultant* will give such instructions as in the *Consultant's* opinion are necessary for the proper performance of the *Work* and to prevent delays pending settlement of the dispute. The parties shall act immediately according to such instructions, it being understood that by so doing neither party will jeopardize any claim the party may have. If it is subsequently determined that such instructions were in error or at variance with the *Contract Documents*, the *Owner* shall pay the *Contractor* costs incurred by the *Contractor* in carrying out such instructions which the *Contractor* was required to do beyond what the *Contract Documents* correctly understood and interpreted would have required, including costs resulting from interruption of the *Work*.

GC 8.2 ADJUDICATION

- 8.2.1 Nothing in this *Contract* shall be deemed to affect the rights of the parties to resolve any dispute by adjudication as may be prescribed by applicable legislation.

GC 8.3 NEGOTIATION, MEDIATION AND ARBITRATION

- 8.3.1 In accordance with the rules for mediation as provided in CCDC 40 ‘Rules for Mediation and Arbitration of Construction Industry Disputes’ in effect at the time of bid closing, the parties shall appoint a Project Mediator
- .1 within 20 *Working Days* after the *Contract* was awarded, or
 - .2 if the parties neglected to make an appointment within the 20 *Working Days*, within 10 *Working Days* after either party by *Notice in Writing* requests that the Project Mediator be appointed.
- 8.3.2 A party shall be conclusively deemed to have accepted a finding of the *Consultant* under GC 2.2 – ROLE OF THE CONSULTANT and to have expressly waived and released the other party from any claims in respect of the particular matter dealt with in that finding unless, within 15 *Working Days* after receipt of that finding, the party sends a *Notice in Writing* of dispute to the other party and to the *Consultant*, which contains the particulars of the matter in dispute and the relevant provisions of the *Contract Documents*. The responding party shall send a *Notice in Writing* of reply to the dispute within 10 *Working Days* after receipt of such *Notice in Writing* setting out particulars of this response and any relevant provisions of the *Contract Documents*.
- 8.3.3 The parties shall make all reasonable efforts to resolve their dispute by amicable negotiations and agree to provide, without prejudice, frank, candid, and timely disclosure of relevant facts, information and documents to facilitate these negotiations.
- 8.3.4 After a period of 10 *Working Days* following receipt of a responding party’s *Notice in Writing* of reply under paragraph 8.3.2, the parties shall request the Project Mediator to assist the parties to reach agreement on any unresolved dispute. The mediated negotiations shall be conducted in accordance with the rules for mediation as provided in CCDC 40 in effect at the time of bid closing.
- 8.3.5 If the dispute has not been resolved at the mediation or within such further period as is agreed by the parties, the Project Mediator will terminate the mediated negotiations by giving *Notice in Writing* to the *Owner*, the *Contractor* and the *Consultant*.
- 8.3.6 By giving a *Notice in Writing* to the other party and the *Consultant*, not later than 10 *Working Days* after the date of termination of the mediated negotiations under paragraph 8.3.5, either party may refer the dispute to be finally resolved by arbitration under the rules of arbitration as provided in CCDC 40 in effect at the time of bid closing. The arbitration shall be conducted in the jurisdiction of the *Place of the Work*.
- 8.3.7 On expiration of the 10 *Working Days*, the arbitration agreement under paragraph 8.3.6 is not binding on the parties and, if a *Notice in Writing* is not given under paragraph 8.3.6 within the required time, the parties may refer the unresolved dispute to the courts or to any other form of dispute resolution, including arbitration, which they have agreed to use.
- 8.3.8 If neither party, by *Notice in Writing*, given within 10 *Working Days* of the date of *Notice in Writing* requesting arbitration in paragraph 8.3.6, requires that a dispute be arbitrated immediately, all disputes referred to arbitration as provided in paragraph 8.3.6 shall be:
- .1 held in abeyance until:
 - (1) *Ready-for-Takeover*,
 - (2) the *Contract* has been terminated, or
 - (3) the *Contractor* has abandoned the *Work*,whichever is earlier; and

- .2 consolidated into a single arbitration under the rules governing the arbitration under paragraph 8.3.6.

GC 8.4 RETENTION OF RIGHTS

- 8.4.1 It is agreed that no act by either party shall be construed as a renunciation or waiver of any rights or recourses, provided the party has given the *Notice in Writing* required under Part 8 of the General Conditions – DISPUTE RESOLUTION and has carried out the instructions as provided in paragraph 8.1.3 of GC 8.1 – AUTHORITY OF THE CONSULTANT.
- 8.4.2 Nothing in Part 8 of the General Conditions – DISPUTE RESOLUTION shall be construed in any way to limit a party from asserting any statutory right to a lien under applicable lien legislation of the jurisdiction of the *Place of the Work* and the assertion of such right by initiating judicial proceedings is not to be construed as a waiver of any right that party may have under paragraph 8.3.6 of GC 8.3 – NEGOTIATION, MEDIATION AND ARBITRATION to proceed by way of arbitration to adjudicate the merits of the claim upon which such a lien is based.

PART 9 PROTECTION OF PERSONS AND PROPERTY

GC 9.1 PROTECTION OF WORK AND PROPERTY

- 9.1.1 The *Contractor* shall protect the *Work*, the *Owner's* property and property adjacent to the *Place of the Work* from damage which may arise as the result of the *Contractor's* operations under the *Contract*, and shall be responsible for such damage, except damage which occurs as the result of:
- .1 errors or omissions in the *Contract Documents*; or
 - .2 acts or omissions by the *Owner*, the *Consultant*, *Other Contractors*, or their agents and employees.
- 9.1.2 Before commencing any work, the *Contractor* shall determine the location of all underground utilities and structures indicated in the *Contract Documents* or that are reasonably apparent in an inspection of the *Place of the Work*.
- 9.1.3 Should the *Contractor* in the performance of the *Contract* damage the *Work*, the *Owner's* property or property adjacent to the *Place of the Work*, the *Contractor* shall be responsible for making good such damage at the *Contractor's* expense.
- 9.1.4 Should damage occur to the *Work* or the *Owner's* property for which the *Contractor* is not responsible, as provided in paragraph 9.1.1, the *Contractor* shall make good such damage to the *Work* and, if the *Owner* so directs, to the *Owner's* property. The *Contract Price* and *Contract Time* shall be adjusted as provided in GC 6.1 – OWNER'S RIGHT TO MAKE CHANGES, GC 6.2 – CHANGE ORDER and GC 6.3 – CHANGE DIRECTIVE.

GC 9.2 TOXIC AND HAZARDOUS SUBSTANCES

- 9.2.1 For the purposes of applicable legislation related to toxic and hazardous substances, the *Owner* shall be deemed to have control and management of the *Place of the Work* with respect to existing conditions.
- 9.2.2 Prior to the *Contractor* commencing the *Work*, the *Owner* shall,
- .1 take all reasonable steps to determine whether any toxic or hazardous substances are present at the *Place of the Work*, and
 - .2 provide the *Consultant* and the *Contractor* with a written list of any such substances that are known to exist and their locations.
- 9.2.3 The *Owner* shall take all reasonable steps to ensure that no person's exposure to any toxic or hazardous substance exceeds the time weighted levels prescribed by applicable legislation at the *Place of the Work* and that no property is damaged or destroyed as a result of exposure to, or the presence of, toxic or hazardous substances which were at the *Place of the Work* prior to the *Contractor* commencing the *Work*.
- 9.2.4 Unless the *Contract* expressly provides otherwise, the *Owner* shall be responsible for taking all necessary steps, in accordance with applicable legislation in force at the *Place of the Work*, to dispose of, store or otherwise render harmless any toxic or hazardous substance which was present at the *Place of the Work* prior to the *Contractor* commencing the *Work*.
- 9.2.5 If the *Contractor*
- .1 encounters toxic or hazardous substances at the *Place of the Work*, or
 - .2 has reasonable grounds to believe that toxic or hazardous substances are present at the *Place of the Work*, which were not brought to the *Place of the Work* by the *Contractor* or anyone for whom the *Contractor* is responsible and which were not disclosed by the *Owner* or which were disclosed but have not been dealt with as required under paragraph 9.2.4, the *Contractor* shall
 - .3 take all reasonable steps, including stopping the *Work*, to ensure that no person's exposure to any toxic or hazardous substance exceeds any applicable time weighted levels prescribed by applicable legislation at the *Place of the Work*, and
 - .4 immediately report the circumstances to the *Consultant* and the *Owner* in writing.

- 9.2.6 If the *Owner* and the *Contractor* do not agree on the existence, significance of, or whether the toxic or hazardous substances were brought onto the *Place of the Work* by the *Contractor* or anyone for whom the *Contractor* is responsible, the *Owner* shall retain and pay for an independent qualified expert to investigate and determine such matters. The expert's report shall be delivered to the *Owner* and the *Contractor*.
- 9.2.7 If the *Owner* and the *Contractor* agree or if the expert referred to in paragraph 9.2.6 determines that the toxic or hazardous substances were not brought onto the place of the *Work* by the *Contractor* or anyone for whom the *Contractor* is responsible, the *Owner* shall promptly at the *Owner's* own expense:
- .1 take all steps as required under paragraph 9.2.4;
 - .2 reimburse the *Contractor* for the costs of all steps taken pursuant to paragraph 9.2.5;
 - .3 extend the *Contract Time* for such reasonable time as the *Consultant* may recommend in consultation with the *Contractor* and the expert referred to in 9.2.6 and reimburse the *Contractor* for reasonable costs incurred as a result of the delay; and
 - .4 indemnify the *Contractor* as required by GC 13.1 – INDEMNIFICATION.
- 9.2.8 If the *Owner* and the *Contractor* agree or if the expert referred to in paragraph 9.2.6 determines that the toxic or hazardous substances were brought onto the place of the *Work* by the *Contractor* or anyone for whom the *Contractor* is responsible, the *Contractor* shall promptly at the *Contractor's* own expense:
- .1 take all necessary steps, in accordance with applicable legislation in force at the *Place of the Work*, to safely remove and dispose the toxic or hazardous substances;
 - .2 make good any damage to the *Work*, the *Owner's* property or property adjacent to the place of the *Work* as provided in paragraph 9.1.3 of GC 9.1 – PROTECTION OF WORK AND PROPERTY;
 - .3 reimburse the *Owner* for reasonable costs incurred under paragraph 9.2.6; and
 - .4 indemnify the *Owner* as required by GC 13.1 – INDEMNIFICATION.
- 9.2.9 If either party does not accept the expert's findings under paragraph 9.2.6, the disagreement shall be settled in accordance with Part 8 of the General Conditions – DISPUTE RESOLUTION. If such disagreement is not resolved promptly, the parties shall act immediately in accordance with the expert's determination and take the steps required by paragraph 9.2.7 or 9.2.8 it being understood that by so doing, neither party will jeopardize any claim that party may have to be reimbursed as provided by GC 9.2 – TOXIC AND HAZARDOUS SUBSTANCES.

GC 9.3 ARTIFACTS AND FOSSILS

- 9.3.1 Fossils, coins, articles of value or antiquity, structures and other remains or things of scientific or historic interest discovered at the *Place or Work* shall, as between the *Owner* and the *Contractor*, be deemed to be the absolute property of the *Owner*.
- 9.3.2 The *Contractor* shall take all reasonable precautions to prevent removal or damage to discoveries as identified in paragraph 9.3.1, and shall advise the *Consultant* upon discovery of such items.
- 9.3.3 The *Consultant* will investigate the impact on the *Work* of the discoveries identified in paragraph 9.3.1. If conditions are found that would cause an increase or decrease in the *Contractor's* cost or time to perform the *Work*, the *Owner*, through the *Consultant*, shall issue appropriate instructions for a change in the *Work* as provided in GC 6.2 – CHANGE ORDER or GC 6.3 – CHANGE DIRECTIVE.

GC 9.4 CONSTRUCTION SAFETY

- 9.4.1 The *Contractor* shall be responsible for establishing, initiating, maintaining, and supervising all health and safety precautions and programs in connection with the performance of the *Work* in accordance with the applicable health and safety legislation.
- 9.4.2 The *Owner* and the *Contractor* shall comply with all health and safety precautions and programs established at the *Place of the Work*.
- 9.4.3 The *Owner* and the *Contractor* shall comply with the rules, regulations and practices required by the applicable health and safety legislation.
- 9.4.4 The *Owner* shall cause the *Consultant*, *Other Contractors* and the *Owner's* own forces to comply with all health and safety precautions and programs established by the *Contractor* at the *Place of the Work*.
- 9.4.5 Nothing in this *Contract* shall affect the determination of liability under the applicable health and safety legislation.

GC 9.5 MOULD

- 9.5.1 If the *Contractor* or the *Owner* observes or reasonably suspects the presence of mould at the *Place of the Work*, the remediation of which is not expressly part of the *Work*,
- .1 the observing party shall promptly report the circumstances to the other party in writing,
 - .2 the *Contractor* shall promptly take all reasonable steps, including stopping the *Work* if necessary, to ensure that no person suffers injury, sickness or death and that no property is damaged as a result of exposure to or the presence of the mould, and

- .3 if the *Owner* and the *Contractor* do not agree on the existence, significance or cause of the mould or as to what steps need be taken to deal with it, the *Owner* shall retain and pay for an independent qualified expert to investigate and determine such matters. The expert's report shall be delivered to the *Owner* and the *Contractor*.
- 9.5.2 If the *Owner* and the *Contractor* agree, or if the expert referred to in paragraph 9.5.1.3 determines that the presence of mould was caused by the *Contractor*'s operations under the *Contract*, the *Contractor* shall promptly, at the *Contractor*'s own expense:
- .1 take all reasonable and necessary steps to safely remediate or dispose of the mould,
 - .2 make good any damage to the *Work*, the *Owner*'s property or property adjacent to the *Place of the Work* as provided in paragraph 9.1.3 of GC 9.1 – PROTECTION OF WORK AND PROPERTY,
 - .3 reimburse the *Owner* for reasonable costs incurred under paragraph 9.5.1.3, and
 - .4 indemnify the *Owner* as required by GC 13.1 – INDEMNIFICATION.
- 9.5.3 If the *Owner* and the *Contractor* agree, or if the expert referred to in paragraph 9.5.1.3 determines that the presence of mould was not caused by the *Contractor*'s operations under the *Contract*, the *Owner* shall promptly, at the *Owner*'s own expense:
- .1 take all reasonable and necessary steps to safely remediate or dispose of the mould,
 - .2 reimburse the *Contractor* for the cost of taking the steps under paragraph 9.5.1.2 and making good any damage to the *Work* as provided in paragraph 9.1.4 of GC 9.1 – PROTECTION OF WORK AND PROPERTY,
 - .3 extend the *Contract Time* for such reasonable time as the *Consultant* may recommend in consultation with the *Contractor* and the expert referred to in paragraph 9.5.1.3 and reimburse the *Contractor* for reasonable costs incurred as a result of the delay, and
 - .4 indemnify the *Contractor* as required by GC 13.1 – INDEMNIFICATION.
- 9.5.4 If either party does not accept the expert's finding under paragraph 9.5.1.3, the disagreement shall be settled in accordance with Part 8 of the General Conditions – DISPUTE RESOLUTION. If such disagreement is not resolved promptly, the parties shall act immediately in accordance with the expert's determination and take the steps required by paragraphs 9.5.2 or 9.5.3, it being understood that by so doing neither party will jeopardize any claim the party may have to be reimbursed as provided by GC 9.5 – MOULD.

PART 10 GOVERNING REGULATIONS

GC 10.1 TAXES AND DUTIES

- 10.1.1 The *Contract Price* shall include all taxes and customs duties in effect at the time of the bid closing except for *Value Added Taxes* payable by the *Owner* to the *Contractor* as stipulated in Article A-4 of the Agreement – CONTRACT PRICE.
- 10.1.2 Any increase or decrease in costs to the *Contractor* due to changes in taxes and duties after the time of the bid closing shall increase or decrease the *Contract Price* accordingly.

GC 10.2 LAWS, NOTICES, PERMITS, AND FEES

- 10.2.1 The laws of the *Place of the Work* shall govern the *Work*.
- 10.2.2 The *Owner* shall obtain and pay for development approvals, building permit, permanent easements, rights of servitude, and all other necessary approvals and permits, except for the permits and fees referred to in paragraph 10.2.3 or for which the *Contract Documents* specify as the responsibility of the *Contractor*.
- 10.2.3 The *Contractor* shall be responsible for the procurement of permits, licences, inspections, and certificates, which are necessary for the performance of the *Work* and customarily obtained by contractors in the jurisdiction of the *Place of the Work* after the issuance of the building permit. The *Contract Price* includes the cost of these permits, licences, inspections, and certificates, and their procurement.
- 10.2.4 The *Contractor* shall give the required notices and comply with the laws, ordinances, rules, regulations, or codes which are or become in force during the performance of the *Work* and which relate to the *Work*, to the preservation of the public health, and to construction safety.
- 10.2.5 The *Contractor* shall not be responsible for verifying that the *Contract Documents* are in compliance with the applicable laws, ordinances, rules, regulations, or codes relating to the *Work*. If the *Contract Documents* are at variance therewith, or if, subsequent to the time of bid closing, changes are made to the applicable laws, ordinances, rules, regulations, or codes which require modification to the *Contract Documents*, the *Contractor* shall advise the *Consultant* in writing requesting direction immediately upon such variance or change becoming known. The *Consultant* will issue the changes required to the *Contract Documents* as provided in GC 6.1 – OWNER'S RIGHT TO MAKE CHANGES, GC 6.2 – CHANGE ORDER and GC 6.3 – CHANGE DIRECTIVE.

- 10.2.6 If the *Contractor* fails to advise the *Consultant* in writing; fails to obtain direction as required in paragraph 10.2.5; and performs work knowing it to be contrary to any laws, ordinances, rules, regulations, or codes; the *Contractor* shall be responsible for and shall correct the violations thereof; and shall bear the costs, expenses and damages attributable to the failure to comply with the provisions of such laws, ordinances, rules, regulations, or codes.
- 10.2.7 If, subsequent to the time of bid closing, changes are made to applicable laws, ordinances, rules, regulations, or codes of authorities having jurisdiction which affect the cost of the *Work*, either party may submit a claim in accordance with the requirements of GC 6.6 – CLAIMS FOR A CHANGE IN CONTRACT PRICE.

GC 10.3 PATENT FEES

- 10.3.1 The *Contractor* shall pay the royalties and patent licence fees required for the performance of the *Contract*. The *Contractor* shall hold the *Owner* harmless from and against claims, demands, losses, costs, damages, actions, suits, or proceedings arising out of the *Contractor*'s performance of the *Contract* which are attributable to an infringement or an alleged infringement of a patent of invention by the *Contractor* or anyone for whose acts the *Contractor* may be liable.
- 10.3.2 The *Owner* shall hold the *Contractor* harmless against claims, demands, losses, costs, damages, actions, suits, or proceedings arising out of the *Contractor*'s performance of the *Contract* which are attributable to an infringement or an alleged infringement of a patent of invention in executing anything for the purpose of the *Contract*, the physical model, plan or design of which was supplied to the *Contractor* as part of the *Contract*.

GC 10.4 WORKERS' COMPENSATION

- 10.4.1 Prior to commencing the *Work*, and again with the *Contractor*'s applications for payment, the *Contractor* shall provide evidence of compliance with workers' compensation legislation at the *Place of the Work*.

PART 11 INSURANCE

GC 11.1 INSURANCE

- 11.1.1 Without restricting the generality of GC 13.1 – INDEMNIFICATION, the *Contractor* shall provide, maintain and pay for the following insurance coverages, the requirements of which are specified in CCDC 41 'CCDC Insurance Requirements' in effect at the time of bid closing except as hereinafter provided:
- 1 General liability insurance in the name of the *Contractor* and include, or in the case of a single, blanket policy, be endorsed to name, the *Owner* and the *Consultant* as insureds but only with respect to liability, other than legal liability arising out of their sole negligence, arising out of the operations of the *Contractor* with regard to the *Work*. General liability insurance shall be maintained from the date of commencement of the *Work* until one year from the date of *Ready-for-Takeover*. Liability coverage shall be provided for completed operations hazards from the date of *Ready-for-Takeover* on an ongoing basis for a period of 6 years following *Ready-for-Takeover*.
 - 2 Automobile Liability Insurance from the date of commencement of the *Work* until one year after the date of *Ready-for-Takeover*.
 - 3 Unmanned aerial vehicle aircraft, manned aircraft or watercraft Liability Insurance when owned or non-owned manned or unmanned aircraft or watercraft are used directly or indirectly in the performance of the *Work*.
 - 4 "Broad form" property insurance in the joint names of the *Contractor*, the *Owner* and the *Consultant*. The policy shall include as insureds all *Subcontractors*. The "Broad form" property insurance shall be provided from the date of commencement of the *Work* until the earliest of:
 - (1) 10 calendar days after the date of *Ready-for-Takeover*;
 - (2) on the commencement of use or occupancy of any part or section of the *Work* unless such use or occupancy is for construction purposes, habitational, office, banking, convenience store under 465 square metres in area, or parking purposes, or for the installation, testing and commissioning of equipment forming part of the *Work*; and
 - (3) when left unattended for more than 30 consecutive calendar days or when construction activity has ceased for more than 30 consecutive calendar days.
 - 5 Boiler and machinery insurance in the joint names of the *Contractor*, the *Owner* and the *Consultant*. The policy shall include as insureds all *Subcontractors*. The coverage shall be maintained continuously from commencement of use or operation of the boiler and machinery objects insured by the policy and until 10 calendar days after the date of *Ready-for-Takeover*.
 - 6 The "Broad form" property and boiler and machinery 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. In the event of loss or damage:
 - (1) 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 *Contract Time* relative to the extent of the loss or damage as the *Consultant* may recommend in consultation with the *Contractor*;

- (2) the *Contractor* shall be entitled to receive from the *Owner*, in addition to the amount due under the *Contract*, the amount 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 in accordance with the progress payment provisions. 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*; and
- (3) to the *Work* arising from the work of the *Owner*, the *Owner's* own forces or *Other Contractors*, the *Owner* shall, in accordance with the *Owner's* obligations under the provisions relating to construction by the *Owner* or *Other Contractors*, pay the *Contractor* the cost of restoring the *Work* as the restoration of the *Work* proceeds and as in accordance with the progress payment provisions.

- .7 *Contractors' Equipment Insurance* from the date of commencement of the *Work* until one year after the date of *Ready-for-Takeover*.
- .8 *Contractors' Pollution Liability Insurance* from the date of commencement of the *Work* until one year after the date of *Ready-for-Takeover*.

- 11.1.2 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 applicable to the *Work*.
- 11.1.3 The parties shall pay their share of the deductible amounts in direct proportion to their responsibility in regards to any loss for which the above policies are required to pay, except where such amounts may be excluded by the terms of the *Contract*.
- 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 to provide and maintain such insurance and give evidence to the *Contractor* and the *Consultant*. The *Contractor* shall pay the cost thereof to the *Owner* on demand or the *Owner* may deduct the cost from the amount which 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 If a revised version of CCDC 41 is published, which specifies reduced insurance requirements, the parties shall address such reduction, prior to the *Contractor's* insurance policy becoming due for renewal, and record any agreement in a *Change Order*.
- 11.1.7 If a revised version of CCDC 41 is published, which specifies increased insurance requirements, the *Owner* may request the increased coverage from the *Contractor* by way of a *Change Order*.
- 11.1.8 A *Change Directive* shall not be used to direct a change in the insurance requirements in response to the revision of CCDC 41.

PART 12 OWNER TAKEOVER

GC 12.1 READY-FOR-TAKEOVER

- 12.1.1 The prerequisites to attaining *Ready-for-Takeover* of the *Work* are limited to the following:
 - .1 The *Consultant* has certified or verified the *Substantial Performance of the Work*.
 - .2 Evidence of compliance with the requirements for occupancy or occupancy permit as prescribed by the authorities having jurisdiction.
 - .3 Final cleaning and waste removal at the time of applying for *Ready-for-Takeover*, as required by the *Contract Documents*.
 - .4 The delivery to the *Owner* of such operations and maintenance documents reasonably necessary for immediate operation and maintenance, as required by the *Contract Documents*.
 - .5 Make available a copy of the as-built drawings completed to date on site.
 - .6 Startup, testing required for immediate occupancy, as required by the *Contract Documents*.
 - .7 Ability to secure access to the *Work* has been provided to the *Owner*, if required by the *Contract Documents*.
 - .8 Demonstration and training, as required by the *Contract Documents*, is scheduled by the *Contractor* acting reasonably.
- 12.1.2 If any prerequisites set forth in paragraphs 12.1.1.3 to 12.1.1.6 must be deferred because of conditions reasonably beyond the control of the *Contractor*, or by agreement between the *Owner* and the *Contractor* to do so, *Ready-for-Takeover* shall not be delayed.
- 12.1.3 When the *Contractor* considers that the *Work* is *Ready-for-Takeover*, the *Contractor* shall deliver to the *Consultant* and to the *Owner* a comprehensive list of items to be completed or corrected, together with a written application for *Ready-for-Takeover* for review. Failure to include an item on the list does not alter the responsibility of the *Contractor* to complete the *Contract*.
- 12.1.4 The *Consultant* will review the *Work* to verify the validity of the application and will promptly, and in any event, no later than 10 calendar days after receipt of the *Contractor's* list and application:

- .1 advise the *Contractor* in writing that the *Work* is not *Ready-for-Takeover* and give reasons why, or
- .2 confirm the date of *Ready-for-Takeover* in writing to each of the *Owner* and the *Contractor*.

12.1.5 Immediately following the confirmation of the date of *Ready-for-Takeover*, the *Contractor*, in consultation with the *Consultant*, shall establish a reasonable date for finishing the *Work*.

12.1.6 The provision of GC 12.1 – READY-FOR-TAKEOVER shall be subject to GC 12.2 – EARLY OCCUPANCY BY THE OWNER.

GC 12.2 EARLY OCCUPANCY BY THE OWNER

12.2.1 The *Owner* may take occupancy of a part or the entirety of the *Work* before *Ready-for-Takeover* has been attained only as agreed by the *Contractor* which agreement shall not be unreasonably withheld.

12.2.2 The *Owner* shall not occupy a part or the entirety of the *Work* without prior approval by authorities having jurisdiction.

12.2.3 If the *Owner* takes occupancy of a part of the *Work* before *Ready-for-Takeover* has been attained:

- .1 The part of the *Work* which is occupied shall be deemed to have been taken over by the *Owner* as from the date on which it is occupied.
- .2 The *Contractor* shall cease to be liable for the care of such part as from this date, when responsibility shall pass to the *Owner*.
- .3 The warranty period specified in paragraph 12.3.1 of GC 12.3 – WARRANTY for that part of the *Work* shall start from the date on which it is occupied.

12.2.4 If the *Owner* takes occupancy of the entirety of the *Work* before all the prerequisites are met as described in paragraph 12.1.1 of GC 12.1 – READY-FOR-TAKEOVER, the *Work* shall, subject to the requirements of the applicable lien legislation, be deemed to achieve *Ready-for-Takeover*. This shall not relieve the *Contractor*'s responsibility to complete the *Work* in a timely manner.

GC 12.3 WARRANTY

12.3.1 Except for extended warranties as described in paragraph 12.3.6, the warranty period under the *Contract* is one year from the date when *Ready-for-Takeover* has been attained.

12.3.2 The *Contractor* shall be responsible for the proper performance of the *Work* to the extent that the design and *Contract Documents* permit such performance.

12.3.3 The *Owner*, through the *Consultant*, shall promptly give the *Contractor Notice in Writing* of observed defects and deficiencies which occur during the one year warranty period.

12.3.4 Subject to paragraph 12.3.2, the *Contractor* shall correct promptly, at the *Contractor*'s expense, defects or deficiencies in the *Work* which appear prior to and during the one year warranty period.

12.3.5 The *Contractor* shall correct or pay for damage resulting from corrections made under the requirements of paragraph 12.3.4.

12.3.6 Any extended warranties required beyond the one year warranty period as described in paragraph 12.3.1, shall be as specified in the *Contract Documents*. Extended warranties shall be issued by the warrantor to the benefit of the *Owner*. The *Contractor*'s responsibility with respect to extended warranties shall be limited to obtaining any such extended warranties from the warrantor. The obligations under such extended warranties are solely the responsibilities of the warrantor.

PART 13 INDEMNIFICATION AND WAIVER

GC 13.1 INDEMNIFICATION

13.1.1 Without restricting the parties' obligation to indemnify respecting toxic and hazardous substances, patent fees and defect in title claims all as described in paragraphs 13.1.4 and 13.1.5, the *Owner* and the *Contractor* shall each indemnify and hold harmless the other from and against all claims, demands, losses, costs, damages, actions, suits, or proceedings whether in respect to losses suffered by them or in respect to claims by third parties that arise out of, or are attributable in any respect to their involvement as parties to this *Contract*, provided such claims are:

- .1 caused by:
 - (1) the negligent acts or omissions of the party from whom indemnification is sought or anyone for whose negligent acts or omissions that party is liable, or
 - (2) a failure of the party to the *Contract* from whom indemnification is sought to fulfill its terms or conditions; and
- .2 made by *Notice in Writing* within a period of 6 years from the *Ready-for-Takeover* date or within such shorter period as may be prescribed by any limitation statute of the Province or Territory of the *Place of the Work*.

The parties expressly waive the right to indemnity for claims other than those provided for in this *Contract*.

- 13.1.2 The obligation of either party to indemnify as set forth in paragraph 13.1.1 shall be limited as follows:
- .1 In respect to losses suffered by the *Owner* and the *Contractor* for which insurance is to be provided by either party pursuant to GC 11.1 – INSURANCE, the minimum liability insurance limit for one occurrence, of the applicable insurance policy, as referred to in CCDC 41 in effect at the time of bid closing.
 - .2 In respect to losses suffered by the *Owner* and the *Contractor* for which insurance is not required to be provided by either party in accordance with GC 11.1 – INSURANCE, the greater of the *Contract Price* as recorded in Article A-4 – CONTRACT PRICE or \$2,000,000, but in no event shall the sum be greater than \$20,000,000.
 - .3 In respect to indemnification by a party against the other with respect to losses suffered by them, such obligation shall be restricted to direct loss and damage, and neither party shall have any liability to the other for indirect, consequential, punitive or exemplary damages.
 - .4 In respect to indemnification respecting claims by third parties, the obligation to indemnify is without limit.
- 13.1.3 The obligation of either party to indemnify the other as set forth in paragraphs 13.1.1 and 13.1.2 shall be inclusive of interest and all legal costs.
- 13.1.4 The *Owner* and the *Contractor* shall indemnify and hold harmless the other from and against all claims, demands, losses, costs, damages, actions, suits, or proceedings arising out of their obligations described in GC 9.2 – TOXIC AND HAZARDOUS SUBSTANCES.
- 13.1.5 The *Owner* shall indemnify and hold harmless the *Contractor* from and against all claims, demands, losses, costs, damages, actions, suits, or proceedings:
- .1 as described in paragraph 10.3.2 of GC 10.3 – PATENT FEES, and
 - .2 arising out of the *Contractor*'s performance of the *Contract* which are attributable to a lack of or defect in title or an alleged lack of or defect in title to the *Place of the Work*.
- 13.1.6 In respect to any claim for indemnity or to be held harmless by the *Owner* or the *Contractor*:
- .1 *Notice in Writing* of such claim shall be given within a reasonable time after the facts upon which such claim is based become known; and
 - .2 should any party be required as a result of its obligation to indemnify another to pay or satisfy a final order, judgment or award made against the party entitled by this contract to be indemnified, then the indemnifying party upon assuming all liability for any costs that might result shall have the right to appeal in the name of the party against whom such final order or judgment has been made until such rights of appeal have been exhausted.

GC 13.2 WAIVER OF CLAIMS

- 13.2.1 Subject to any lien legislation applicable to the *Place of the Work*, the *Contractor* waives and releases the *Owner* from all claims which the *Contractor* has or reasonably ought to have knowledge of that could be advanced by the *Contractor* against the *Owner* under the *Contract*, including, without limitation, those arising from negligence or breach of contract in respect to which the cause of action is based upon acts or omissions which occurred prior to or on the *Ready-for-Takeover* date, except as follows:
- .1 claims arising prior to or on the *Ready-for-Takeover* date for which *Notice in Writing* of claim has been received by the *Owner* from the *Contractor* no later than 5 calendar days before the expiry of the lien period provided by the lien legislation applicable at the *Place of the Work* or 20 calendar days following the *Ready-for-Takeover* date, whichever is later;
 - .2 indemnification for claims advanced against the *Contractor* by third parties for which a right of indemnification may be asserted by the *Contractor* against the *Owner* pursuant to the provisions of this *Contract*;
 - .3 claims respecting toxic and hazardous substances, patent fees and defect in title matters for which a right of indemnity could be asserted by the *Contractor* pursuant to the provisions of paragraphs 13.1.4 or 13.1.5 of GC 13.1 – INDEMNIFICATION; and
 - .4 claims resulting from acts or omissions which occur after the *Ready-for-Takeover* date.
- 13.2.2 The *Contractor* waives and releases the *Owner* from all claims resulting from acts or omissions which occurred after the *Ready-for-Takeover* date except for:
- .1 indemnification respecting third party claims, and claims respecting toxic and hazardous substances, patent fees and defect in title matters, all as referred in paragraphs 13.2.1.2 and 13.2.1.3; and
 - .2 claims for which *Notice in Writing* of claim has been received by the *Owner* from the *Contractor* within 395 calendar days following the *Ready-for-Takeover* date.
- 13.2.3 Subject to any lien legislation applicable to the *Place of the Work*, the *Owner* waives and releases the *Contractor* from all claims which the *Owner* has or reasonably ought to have knowledge of that could be advanced by the *Owner* against the *Contractor* under the *Contract*, including, without limitation, those arising from negligence or breach of contract in respect to which the cause of action is based upon acts or omissions which occurred prior to or on the *Ready-for-Takeover* date, except as follows:
- .1 claims arising prior to or on the *Ready-for-Takeover* date for which *Notice in Writing* of claim has been received by the *Contractor* from the *Owner* no later than 20 calendar days following the *Ready-for-Takeover* date;

- .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 claims respecting toxic and hazardous substances for which a right of indemnity could be asserted by the *Owner* against the *Contractor* pursuant to the provisions of paragraph 13.1.4 of GC 13.1 – INDEMNIFICATION;
 - .4 damages arising from the *Contractor*'s actions which result in substantial defects or deficiencies in the *Work*. "Substantial defects or deficiencies" mean those defects or deficiencies in the *Work* which affect the *Work* to such an extent or in such a manner that a significant part or the whole of the *Work* is unfit for the purpose intended by the *Contract Documents*;
 - .5 claims arising pursuant to GC 12.3 – WARRANTY; and
 - .6 claims arising from acts or omissions which occur after the *Ready-for-Takeover* date.
- 13.2.4 Respecting claims arising upon substantial defects and deficiencies in the *Work*, as referenced in paragraph 13.2.3.4, and notwithstanding paragraph 13.2.3.5, the *Owner* waives and releases the *Contractor* from all claims except claims for which *Notice in Writing* of claim has been received by the *Contractor* from the *Owner* within a period of six years from the *Ready-for-Takeover* date, provided that any limitation statute of the Province or Territory of the *Place of the Work* permit such agreement. If the applicable limitation statute does not permit such agreement, the time within which any such claim may be brought shall be such shorter period as may be prescribed by any limitation statute of the Province or Territory of the *Place of the Work*.
- 13.2.5 The *Owner* waives and releases the *Contractor* from all claims arising from acts or omissions which occur after the *Ready-for-Takeover* date, except for:
- .1 indemnification for claims advanced against the *Owner* by third parties, as referenced in paragraph 13.2.3.2;
 - .2 claims respecting toxic and hazardous substances for which a right of indemnity could be asserted by the *Owner* against the *Contractor*, as referenced in paragraph 13.2.3.3;
 - .3 claims arising under GC 12.3 – WARRANTY; and
 - .4 claims for which *Notice in Writing* has been received by the *Contractor* from the *Owner* within 395 calendar days following the *Ready-for-Takeover* date.
- 13.2.6 "Notice in Writing of claim" as provided for in GC 13.2 – WAIVER OF CLAIMS to preserve a claim or right of action which would otherwise, by the provisions of GC 13.2 – WAIVER OF CLAIMS, be deemed to be waived, must include the following:
- .1 a clear and unequivocal statement of an 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.
- 13.2.7 A claim for lien asserted under the lien legislation prevailing at the *Place of the Work* shall qualify as notice of claim for the purposes of this *Contract*.
- 13.2.8 The party giving the *Notice in Writing* of claim as provided for in GC 13.2 – WAIVER OF CLAIMS shall submit within a reasonable time a detailed account of the amount claimed.
- 13.2.9 Where the event or series of events giving rise to a claim made under paragraphs 13.2.1 or 13.2.3 has a continuing effect, the detailed account submitted under paragraph 13.2.8 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 such claim 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.
- 13.2.10 Nothing in GC 13.2 – WAIVER OF CLAIMS shall be deemed to affect the rights of the parties under any lien legislation or limitations legislation prevailing at the *Place of the Work*.

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C-2	SITE SERVICING PLAN
C-3	EXISTING CONDITIONS, REMOVALS AND ABANDONMENT PLAN
C-4	GRADING PLAN AND EROSION & SEDIMENT CONTROL PLAN
C-5	NOTES
C-6	ROOF DRAINAGE PLAN & DETAILS
C-7	DRAINAGE PLAN

LANDSCAPE PLAN: JAMES B. LENNOX & ASSOCIATES LANDSCAPE ARCHITECTS

I.1	TREE CONSERVATION REPORT AND LANDSCAPE PLAN

SURVEY: STANTEC

GEOTECHNICAL INVESTIGATION: EXP

1. DEFINITIONS

- 1.1. Tender Documents include the Instructions to Bidders, the Request for Quotation Offer, other contract forms and the proposed Contract Documents including any Addenda issued prior to receipt of tender. The Contract Documents proposed for the Work consist of the Owner-Contractor Agreement, the Conditions of the Contract (General, Supplementary and other Conditions), the Drawings, the Specifications and all Addenda issued prior to and all Modifications issued after execution of the Contract.
- 1.2. All definitions set forth in the General Conditions of the Contract for Construction, CCDC Document 2, or in other Contract Documents are applicable to the Tender Documents.
- 1.3. Addenda are written or graphic instruments issued by the Architect prior to the execution of the Contract which modify or interpret the Tender Documents by additions, deletions, clarifications or corrections.
- 1.4. A Tender is a complete and properly signed proposal to do the Work or designated portion thereof for the sums stipulated therein, submitted in accordance with the Tender Documents.
- 1.5. A Bidder is a person or entity who submits a Bid.

2. INVITATION

- 2.1. Conseil des écoles catholiques du Centre-Est (CECCE) is calling for Bids to provide Firm Price Tenders for a 7 classes room addition and renovate parts of the existing École élémentaire catholique J.-L. Couroux school. Irrevocable bids on the Request for Quotation Offer form must be submitted **on MERX website only**

Subject : REQUEST FOR QUOTATION OFFER - Project No.2025JLC117

Date and time: **NO LATER THAN 14:00 (PM) local time on the 14 day of August 2026.**

Any proposal exceeding this deadline will not be accepted. CECCE will not be responsible for the unsuccessful transmission / reception of a submission

Content of message must include:

PDF of Mandatory Submittals as identified in Item 19 of this Section

The original papers as identified in Item 19 of this Section will be mandatory to the winning contractor and will be asked to be sent 48 hours after the CECCE will have contacted them. Any other original documents can be asked by the CECCE.

Bids submitted in any other manner will not be accepted.

- 2.2. There will be no public opening of the Request for quotation offers at the time of closing. All bidders will be advised of the name and the price only of the selected bidder at the time of award.
- 2.3. No other representative of the CECCE shall be contacted by email or mail regarding this Request for Quotation.
- 2.4. The CECCE accepts no responsibility for, and the Proponent agrees not to rely upon, any verbal or written statements or representation from any other person employed by the CECCE. Failure to follow this clause shall result in the disqualification of the Proponent.
- 2.5. The CECCE has the rights to change the above-mentioned dates at its sole discretion.

3. DOCUMENTS

- 3.1. Bid Documents for General may be obtained directly on MERX's website.

DISCLAIMER: By acceptance of the Tender Documents in the electronic PDF format, the Contractor is agreed to take full responsibility for the proper use and distribution of the Tender Documents, and the Contractor is agreed that in the event of any apparent discrepancy between electronic PDF format and hard paper copy of the Tender Documents received from the Architect, the PDF format copy of the Tender Documents shall prevail and at the event of the successful bid the hard copy of the Tender Documents will become set of the Contract Documents.

- 3.2. This Bid invitation is based on the documents identified in Appendix "A" to the Conseil des écoles catholiques du Centre-Est Request for Quotation Offer.
- 3.3. The tender documents, in PDF format, will be made available at the Ottawa Construction Association, 9 Antares Drive, Ottawa to any sub-contractors wishing to bid on the project.
- 3.4. Tender Documents will not be issued directly to any Sub-Contractors.
- 3.5. Contractors shall use complete sets of Tender Documents in preparing Tenders; neither the Owner nor the Architect assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Tender Documents.
- 3.6. The Conseil des écoles catholiques du Centre-Est shall not be under obligation to enter into any agreement with anyone in connection with this Tender and bids received, nor to pay for any costs incurred by the Bidders in the preparation of the Tender submitted.
- 3.7. The General Contractors prequalified on the basis of qualification number 2024QUA004 will be invited to bid on this project.

4. SITE VISIT

- 4.1. A site visit of the school has been arranged, with the CECCE and the design consultants. Considering the scope of work and its sequencing, **we strongly recommend that all contractors and their sub trades participate to this visit.**

Address and location of the visit:

École élémentaire catholique J.-L. Couroux
Main entrance on 10 Findlay Ave,
Carleton Place, Ontario
K7C 4K1

Date and time of the visit: at 1:00 PM, July 20, 2026

5. FORM OF AGREEMENT

5.1. Form to be used Between Owner and Contractor

5.1.1. Unless otherwise required in the Tender Documents, the Agreement for the Work will be written on the Stipulated Price Contract CCDC 2 (2020), Standard Form of Agreement Between Owner and Contractor

6. EXAMINATION

6.1. Prior to submitting Bids, Bidders shall examine the Site and conditions likely to affect their work, and procure relevant documentation and all other pertinent information which may be necessary to allow proper execution of the Contract. No claim will be accepted for work or material that may be necessary for proper execution and completion of Contract due to the lack of such an examination. The following may require examination:

- a) All Contract Documents.
- b) Laws, codes, regulations, standards and any other restrictions or constraints that may affect the Work.
- c) The Site and its surroundings:
 - (1) existing premises and uses;
 - (2) existing frost protection and fencing;
 - (3) adjacent properties and uses;
 - (4) adjoining public areas and uses, and
 - (5) public and private above-ground and below-ground services.
- d) Environmental and Geotechnical Reports.
- e) Existing Building/Site Drawings.

6.2. Neither the Owner nor the Architect will be held responsible for deductions, interpretations and conclusions that the Bidder may make that are unsupported in the Bid Documents.

7. SUBSTITUTION

7.1. Specific materials, products and systems are specified in the Contract Documents to provide a standard of acceptance. Subject to the clauses below, where substitutions are specifically excluded in the individual Sections of the specification, equivalent materials, products or systems by other manufacturers are acceptable as substitutions, provided that the properties and compliances of the substitutions meet or exceed the properties and compliances of the specified materials, products and systems in all respects and that items exposed to sight are of the same appearance as the specified items.

- 7.2. Contractors wishing to submit alternatives for material, product or equipment specified must do so, without exception, during the tender period. Under no circumstances will alternatives submitted after the closing of the tenders be considered.
- 7.3. The Architect reserves the right to accept or reject alternatives, if a request for an alternative is received. A rejection by the Architect of the proposed alternative material, products or equipment is final, and the Architect does not become obligated to give any reason for his action.
- 7.4. Substitutions made after the award of Contract which do not satisfy the above requirements will be rejected by the Architect. Materials, products and systems which are so rejected shall be replaced by the specified items at no cost to the Contract.
- 7.5. The request for alternatives shall include the following:
 - 7.5.1. A description of the proposed substitution.
 - 7.5.2. In the case of materials, products or systems, a direct comparison between the properties and compliances of the specified materials, products or systems with the properties and compliances of the proposed substitution, arranged in tabular form, in the same sequence as specified in the applicable specification section or in the sequence listed in the specified manufacturer's published literature, as appropriate.
 - 7.5.3. In the case of materials or products, country of manufacture.
 - 7.5.4. Shop drawings, product data, and certified test results attesting to the proposed material or product equivalence.
 - 7.5.5. If requested by the Architect, a list of no less than five projects of comparable size and complexity, where the proposed substitution has been used in a similar application. Such projects shall have been in service for at least five (5) years and, where applicable, shall have been subjected to climatic conditions similar to those experienced at the location of the Project. The list shall include the name and current telephone number of the Architect or Prime Architect for each project.
- 7.6. The burden of proof is on the proposer. In the event that the Architect deems the information provided with the request for approval of a substitution to be inadequate, the request may be rejected.
- 7.7. A request constitutes a representation that the Bidder:
 - 7.7.1. Has investigated proposed Product and determined that it meets or exceeds the quality level of the specified Product.
 - 7.7.2. Will provide the same warranty for the Substitution as for the specified Product.
 - 7.7.3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to the Owner. (A later claim by Bidder for an addition to Contract Price because of changes in work necessitated by use of substitutions shall not be considered).
 - 7.7.4. Waives claims for additional costs or time extension which may subsequently become apparent.

7.7.5. Will reimburse the Owner and the Architect for the cost of review or redesign services associated with reapproval by authorities.

7.7.6. Substitutions will not be considered in either of the following circumstances:

7.7.7. When they are indicated or implied on shop drawing or product data submittals, without a separate written request having been made.

7.7.8. When acceptance will require revision to the Contract Documents.

7.7.9. Where the terms "or equal", "or equivalent" or terms of similar meaning are used in the specifications, this shall not be construed as acceptance of any alternative material, product or system to those specified. The use of these terms does not relieve the Subcontractor from his responsibility to follow the procedures for approval of substitutions specified herein.

7.8. When a request to substitute a product is accepted, the Architect will issue an Addendum to known bidders.

8. BID PROCEDURES FOR MECHANICAL AND ELECTRICAL TRADES

8.1. The mechanical and electrical contractors shall bid as a complete mechanical and electrical package and submit their tenders as such to the General Contractors.

9. MECHANICAL SUB-CONTRACTOR AND ELECTRICAL SUB-CONTRACTOR RELATIONSHIP

9.1. The Contractor and all mechanical and electrical trades shall take note of the requirements in the Mechanical and Electrical Specifications that relate to the contractual relationships between the General Contractor, the prime mechanical contractor and all sub-contractors to the prime mechanical contractor.

9.2. It is a requirement of this Contract that there be a single prime mechanical contractor and a single electrical contractor who shall retain as sub-contractors all the other mechanical Sub-contractors and electrical Sub-contractors, if any. There shall not be more than one prime mechanical trade contractor and one prime electrical trade contractor directly retained by the General Contractor.

Note: This information is not required at tender closing

10. LIST OF PRE-QUALIFIED SUB-CONTRACTORS

Security Wiring and Devices
Access card system
(Door contact, intrusion alarm, motion detector, card reader, ect)
Contact: Stephen Desabrais
Mobile: 613-914-9459
Email: sdesabrais@fci.ca

FCI

Wiring only
Contact: Rock Levesque

FCI

Mobile: 613-897-8464
Email: rlevesque@fci.ca

General contractors and their sub-contractors are responsible to contact and forward tender information directly to these qualified sub-contractors to receive bid prices.

11. QUALIFICATION OF SUBCONTRACTORS

- 11.1. The Bidder must ensure that each Subcontractor is a WSIB (Ontario) subscriber. Should any contract be awarded it will be the responsibility of the successful Bidder to ensure that each and every one of the Subcontractor(s) obtain and maintain WSIB (Ontario) coverage throughout the contract term. The successful Bidder must keep confirmation of the same on file and make it available to the Owner immediately upon request.
- 11.2. In the case where any Subcontractor wishes to be considered as an Independent Operator, the successful Bidder must submit on their behalf, written correspondence from the Workplace Safety & Insurance Board of Ontario confirming the Subcontractor's status in this regard. Any such Subcontractor would also be required to sign the Statement of Exemption from Ontario WSIB (Article 3. 13.0).

12. WORK DESCRIPTION LIST

- 12.1. The use of the General Contractors (Bidder) "Own forces" for trades shown with an " * " shall not be acceptable. The School Board will request the successful Bidder to provide the following list of Subcontractor 24 hours following issuance of the letter of Intent.

<u>Work Description</u>
Excavation and Backfill Subcontractor*
Site Services Subcontractor*
Specialized Demolition Subcontractor*
Glued – Laminated Subcontractor*
Asphalt Paving Subcontractor*
Landscaping Subcontractor*
Cast-in-Place Concrete Subcontractor*
Formwork Subcontractor*
Structural Steel and Metal Decking Subcontractor*

École élémentaire catholique J.L.-Couroux
 Section : 00 21 13
 Project title Agrandissement de 7 classes
 Address: 10 Findlay Ave, Carleton Place, On K7C 4K1
 Conseil des écoles catholiques du Centre-Est
 Project No. 2025JLC117

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<u>Work Description</u>
Roof Anchoring System*
Masonry Subcontractor*
Millwork Subcontractor*
Roofing Subcontractor*
Sprayed-in-place Urethane Insulation*
Sprayed Fireproofing*
Exterior Phenolic Wall Panelling System*
Composite Aluminum Subcontractor*
Preformed Metal Siding*
Metal Doors and Frames Subcontractor*
Aluminum Windows/Doors Subcontractor*
Hardware Subcontractor*
Gypsum Board Metal Stud Framing Subcontractor*
Acoustical Ceiling Tile and Grid Subcontractor*
Resilient Flooring Subcontractor*
Rubber Flooring and Stair Treads*
Ceramic Tile Subcontractor*
Painting Subcontractor*
Elevator Subcontractor*
Mechanical*
PRIME MECHANICAL CONTRACTOR
Mechanical Sub-Trade:

<u>Work Description</u>	
.1 Fire Protection	
.2 Plumbing & Utilities (if nor prime)	
.3 Ventilation & Air Conditioning (if not prime)	
.4 Pipe & Duct Insulation	
.5 Air & Water Balancing	
.6 Controls	
Contractor to retain services of a Delta Controls certified and accredited Subcontractor to perform all new work to Building Automation System (BAS)	
Electrical*	
PRIME ELECTRICAL CONTRACTOR	
Fire Alarm System Subcontractor	
P.A. Intercom System	
Video Intercom and Access Control System	
Data Cabling and Devices	
Security Wiring and Devices	

13. ADDENDA

13.1. Inquiries shall be made only by General Contractors bidding this project. Subcontractors shall make contact only through one of these General Contractors.

13.2. Direct questions to:

Architects name Jan Veer
 Phone: 613-797-0047
 E-mail: jan@veerarch.com

- 13.3. Any corrections, deletions, and/or additions to any of the Bid Documents during the bidding period will be issued, by the Owner's authorized agent, as Addenda and will be posted on MERX's website..
- 13.4. Bidders shall ensure that all cost modifications arising out of instructions in the Addenda have been included in the Stipulated Price Bid.
- 13.5. No Addenda will be issued less than seven (7) calendar days before Bid closing. Bidders must request answers to any questions prior to ten (10) calendar days before Bid closing. Clarifications issued as a result of written or verbal inquiries will not be binding unless supported by the issuance of an Addendum.

14. BID FORM

- 14.1. Submit the fully completed Conseil des écoles catholiques du Centre-Est Request for Quotation Offer and Appendices included in the Bid Documents Package.

15. COMPLETION

- 15.1. The Contractor shall begin preparations for the Work immediately upon issuance of a Letter of Intent. Anticipated date of issuance of letter is **August 28, 2026** if the tender price is within the School Board's budget and schedule timeframe.
- 15.2. Start date of construction: **September 8, 2026**
- 15.3. Full Occupancy for the work shall occur **by August 13, 2027**.

The dates indicated on the Construction Schedule – Section 01 32 16 are fixed, and no extensions or adjustments will be granted. The Contractor shall include for all regular, double shift, and weekend work required to meet these completion dates.

Notwithstanding any provision made in the Request for quotation document, the work will start at the prescribed date only if allowed by all municipal, provincial and federal authorities in regards to distancing and essential services restrictions.

If the work under this contract is not authorised to start at the date prescribed in this RFQ, the Purchaser will contact the successful respondent(s) and agree on a new schedule

No work will be allowed to start before authorisation by the Purchaser's representative.

16. BONDS/DEPOSITS

- 16.1. Each tender shall be accompanied by a Bid Bond in the amount of 10% of the Tender Price payable to Conseil des écoles catholiques du Centre-Est.
- 16.2. Regardless of some delays which may occur, the successful bidder shall execute a contract on the forms included in the Contract Documents for the stipulated sum stated in the Tender. Delays may be of any duration up to 90 days.

17. AGREEMENT

- 17.1. Bidders shall also include with their Tender a written "Agreement to Bond" meaning a statement by letter from a Bonding Company indicating that the Bidder, if successful in obtaining the Contract, will be covered by a 50% Performance Bond and a 50% Labour and Materials Payment Bond as required under General Conditions.
- 17.2. The Subcontractors listed below shall have the **capability** to obtain bonding as noted above. Cost for the bonding by subtrades, however, shall not be included in the tender amount at this time. The Owner may request, after tender closing, a written "Agreement to Bond" meaning a statement by letter from a Bonding Company indicating that the subtrade has the ability to be covered by a 50% Performance Bond and a 50% Labour and Materials Payment Bond as required under General Conditions.

Mechanical Subcontractor
Electrical Subcontractor

18. PERFORMANCE AND LABOUR AND MATERIALS PAYMENT

- 18.1. The Contractor shall be required to provide a 50% Performance Bond covering faithful performance of the Contract, and a 50% Labour and Materials Payment Bond guaranteeing that all Bond claimants will be paid for labour and materials furnished to the Contractor or Sub-Contractor for use on the job.
- 18.2. The Performance Bonds and the Labour and Materials Payment Bonds shall be provided before signing of the Contract with the successful bidder. Cost of the bonds shall be included in the Contract Price.

19. MANDATORY SUBMITTALS

- 19.1. Mandatory documents to be submitted on MERX website :

19.1.1. REQUEST FOR QUOTATION OFFER

- 1 Duly filled, sealed and signed Request for Quotation Offer
- 2 Bid Bond
- 3 Agreements to Bond
- 4 Appendix D Compliance with the buy Ontario Directive

20. SAFETY

- 20.1. Bids shall include the Bidder's Workers' Compensation Board number. The Bidder's must submit a copy of the Workers compensation clearance form on request from the CECCE and before signing a contract.

21. EVALUATION AND ACCEPTANCE

- 21.1. The CECCE reserves the right at its sole discretion to reject any Request for Tender offer of a Respondent that is involved in a contentious matter against the CECCE or that was involved in same within the last five (5) years as a principal party whether plaintiff or defence; and that the matter is terminated or still active (the concerned contractor). For the purpose of this Article, any affiliate or corporation under the Respondent's control will be deemed to

be considered as the Respondent. Also, any Respondent directors, administrators or shareholders whose activities are de facto controlled by the Respondent who figure among those concerned by any court action will be considered as the Respondent who is involved in any court action as indicated above.

- 21.2. The Bidder accepts that all documents which are provided under cover of the Conseil des écoles catholiques du Centre-Est Request for Quotation Offer are an integral part of the contractual undertaking. Also, the Bidder accepts that any insufficiency or irregularity committed in completing the Bid Form may result in Bid rejection.
- 21.3. The Conseil des écoles catholiques du Centre-Est reserves the right to request clarification or additional information on any Tender submitted.
- 21.4. On or before the expiration of sixty (90) calendar days from the date of the Bid closing, the Owner will give written notice to the successful Bidder of the Owner's intention to execute a Contract for execution of the Work.
- 21.5. It is the Owner's intent to award this school project as soon after the tender closing as possible.
- 21.6. It must be understood and accepted by each Bidder that all decisions as to the degree to which a submission meets the requirements of this Tender invitation are solely within the judgement of the Evaluation Committee.
- 21.7. Those Bidders, who have substantially complied with the requirements of this Invitation, as determined solely by the Owner in its discretion, shall be evaluated in the sole discretion of the Owner on the following criteria:

PRICE SCHEDULE

Prices as submitted

90 Points

Contractor with headquarters in Ontario

10 Points

- 21.8. Bid submissions will be evaluated according to the criteria listed in Article 21.7.
- 21.9. The Owner reserves the right to accept or reject any part of each submission and/or not to award the contract.
- 21.10. The awarding of the contract is subject to the availability of funds. Should all proposals received exceed budgeted funds, the Owner reserves the right to reduce the scope or to cancel this proposal.
- 21.11. The Owner's interpretation of the contents of the official proposal documents shall prevail.
- 21.12. The Successful Bidder will be issued a Contract for his signature.

22. TIE BREAKER PROCESS

- 22.1. In the event that there are two identical evaluation scores, the tied Bidders will be invited to attend a coin toss in order to determine the Successful Bidder. The Bidder who submitted their proposal first according to the date/time stamp will choose heads or tails.

All Bidders agree that the coin toss is a fair method of determining the Successful Bidder and agree that the result will not be disputed.

23. DEBRIEFING

- 23.1. Not later than sixty (60) days following the date of posting of a contract award notification in respect of the Tender invitation, a Bidder may contact the Purchasing Manager of the CECCE requesting a debriefing, and the Owner shall conduct such debriefing in accordance of the Supply Chain Guideline.
- 23.2. Any request that is not timely received will not be considered and the Bidder will be notified in writing.
- 23.3. Bidders should note that, regardless of the time of submission of a request by a Bidder, debriefings will not be provided until such time as a contract award notification has been posted.

24. BID SUBMISSION PROTEST PROCEDURE

- 24.1. In the event that a Bidder wishes to review the decision of the Owner in respect of any material aspect of the Tender invitation process, and subject to have attended a debriefing, the Bidder shall submit a protest in writing to the Owner within ten (10) days from such debriefing.
- 24.2. Any protest in writing that is not timely received will not be considered and the Bidder will be notified in writing.
- 24.3. A protest in writing shall include the following:
 - 1 A specific identification of the provision and/or procurement procedure that is alleged to have been breached;
 - 2 A specific description of each act alleged to have breached the procurement process;
 - 3 A precise statement of the relevant facts;
 - 4 An identification of the issues to be resolved;
 - 5 The Bidder's arguments and supporting documentation; and
 - 6 The Bidder's requested remedy.

For the purpose of a protest under this Tender invitation, the Purchasing Manager will review and address any submission protest in a timely and appropriate manner.

25. CONFIDENTIALITY / NON-DISCLOSURE OF INFORMATION

- 25.1. It is understood and agreed that all information provided to the Bidder by the Owner as part both the proposal process and the actual performance of this contract is personal and confidential information which is protected of the Education Act, R.S.O. 1990, c. E2 and the Municipal Freedom of Information and Protection of Privacy Act c, R.S.O. 1990, c. M56. The Successful Bidder agrees that during the effective period of the contract, all information provided to the Successful Bidder by the Owner shall be treated a privileged and confidential and shall not be used by the Successful Bidder for any other purpose nor divulged to any third party for any reason whatsoever without the written permission of the Owner.

- 25.2. Bidders shall identify any information contained in their bid submission, which is considered confidential and/or proprietary in nature.

26. BANKRUPTCY OR INSOLVENCY

- 26.1. If the Successful Bidder becomes bankrupt, either by way of assignment or by way of receiving order, or if the Successful Bidder becomes insolvent, the Owner may at its option, immediately employ another Bidder to complete the contract and the Owner shall have a claim against the Successful Bidder or its estate for any additional cost over and above the original contract price, necessary to complete the contract and to remedy any defects.

27. REJECTION

- 27.1. Should a Bid be rejected, the Owner will return the Bid deposit, Bid Bond and Surety Consents for Performance and Labour and Material Bonds.

28. WITHDRAWAL

- 28.1. Requests for Bid withdrawal, after Bid submission but before Bid opening, are to be made to the Owner in writing. The granting of such a request is subject to the discretion of the Owner.

29. UNSUCCESSFUL BIDDER

- 29.1. The Bidder acknowledges the Owner's right to cancel this Tender, to reject any or all bids, to re-advertise for tender submissions, to waive minor irregularities and formalities, and to not necessarily accept the lowest bid.

30. CANADIAN MATERIALS

- 30.1. Wherever possible and consistent with proper economy and efficiency, Canadian materials shall be used throughout the Work.

31. CASH ALLOWANCES AND CONTINGENCY ALLOWANCES

- 31.1. The Stipulated Price Bid will include any Contingency and Cash Allowances identified in the Contract Documents.

32. PERMITS, FEES AND CERTIFICATES

- 32.1. The Stipulated Price Bid will include for all required permits, fees, charges and certificates except for the Building Permit which will be obtained and paid for by the Owner.
- 32.2. The Demolition Contractor will be responsible for obtaining and paying for the demolition permit.

33. TAXES AND DUTIES

- 33.1. Refer to General Conditions for Taxes and Duties.

END OF SECTION

**SUPPLEMENTARY CONDITIONS & AMENDMENTS TO STANDARD CONSTRUCTION DOCUMENT
CCDC2 -2020 STIPULATED PRICE CONTRACT**

(the “Supplementary Conditions”)

**AGREEMENT, DEFINITIONS, AND
GENERAL CONDITIONS**

The Standard Construction Document CCDC 2 2020 for a Stipulated Price Contract, English version, consisting of the Agreement Between *Owner* and Contractor, Definitions and General Conditions of the Stipulated Price Contract, Parts 1 to 13 inclusive, governing same, together with the changes with the new *Construction Act* is hereby made part of these *Contract Documents*, with the following amendments, additions and modifications:

AGREEMENT BETWEEN OWNER AND CONTRACTOR

SC1 ARTICLE A-1 – THE WORK

	A-1.3	<u>Amend</u> Article A-1.3 by <u>deleting</u> all of the words after “<i>Contract Documents</i>” and <u>replace</u> them with the following” “attain .1 <i>Substantial Performance of the Work</i> by the 13 day of August in the year 2027. .2 (if applicable) <i>Occupancy</i> by the 13 day of August in the year 2027, and .3 <i>Ready-for-Takeover</i> by the 13 day of September in the year 2027.”

SC2 ARTICLE A-3 – CONTRACT DOCUMENTS

	A-3.1	<u>Add</u> the following documents to the list of <i>Contract Documents</i> in Article A-3.1: • Conseil des écoles catholique du Centre-Est (CECCE)’s Board’s Supplementary Conditions & Amendments to Standard Construction Document CCDC2-2020 Stipulated Price Subcontract, November 2022 Version, including any Special Supplementary Conditions listed in Appendix. • <i>Drawings</i> • <i>Specifications</i> • Performance Bond (Form 32 -Performance Bond under Section 85.1 of the <i>Act</i>) • Labour and Material Payment Bond (Form 31 – Labour and Material Payment Bond under Section 85.1 of the <i>Act</i>)

SC3 ARTICLE A-4 – CONTRACT PRICE

SC3.1	A-4.4	<u>Delete</u> Article A-4.4 and <u>replace</u> it with the following: “4.4 The <i>Contract Price</i> shall remain fixed for the duration of the <i>Contract Time</i>, subject only to adjustments as provided for in the <i>Contract Documents</i>. For certainty, and without limiting the general application of the preceding sentence, the <i>Contractor</i> assumes all risks in connection with cost increases for overhead, <i>Products</i>, <i>Labour</i>, and <i>Construction Equipment</i> prescribed by the <i>Contract Documents</i> for the performance of the <i>Work</i>, and the <i>Contractor</i> assumes all responsibility for liabilities and additional costs that may arise as a result of the <i>Contractor’s</i> inclusion of any <i>Product</i>, <i>Construction Equipment</i>, <i>Supplier</i>, or <i>Subcontractor</i> in its calculation of the <i>Contract Price</i>.”

SC4 ARTICLE A-5 – PAYMENT

SC4.1	A-5.1	<u>Delete</u> Article A- 5.1 in its entirety including all subparagraphs and <u>replace</u> it with the following: “5.1 Subject to the provisions of the <i>Contract Documents</i> and the <i>Construction Act</i>, the <i>Owner</i> shall: .1 make progress payments to the <i>Contractor</i> on account of the <i>Contract Price</i> when due together with such <i>Value Added Taxes</i> as may be applicable to such payments, .2 upon <i>Substantial Performance of the Work</i> as certified by the <i>Consultant</i>, and on the 61st day after the publication of the certificate of <i>Substantial Performance of the Work</i>, in accordance with the <i>Construction Act</i>, there being no claims for lien registered against the title to the <i>Place of the Work</i> and no written notices of lien delivered to the <i>Owner</i>, pay the <i>Contractor</i> the unpaid balance of the holdback, together with such <i>Value Added Taxes</i> as may be applicable to such payment, less any amount stated in the <i>Owner’s Notice of Non-Payment</i>. .3 after <i>Ready-for-Takeover</i> has been achieved in accordance with the <i>Contract Documents</i> and the <i>Work</i> is complete, there being no claims for lien registered against the title to the <i>Place of the Work</i> and no written notices of lien delivered to the <i>Owner</i>, pay the <i>Contractor</i> any unpaid balance of the <i>Contract Price</i> in accordance with GC 5.5 – FINAL PAYMENT, together with such <i>Value Added Taxes</i> as may be applicable to such payment.”
SC 4.2	A-5.2.1	<u>Delete</u> subparagraph 5.2.1 in its entirety and <u>replace</u> it with the following: “.1 Should either party fail to make payments as they become due under the terms of the <i>Contract</i> or in an award by arbitration or court, interest shall also become due and payable on such unpaid amounts at the prejudgment interest rate prescribed by the <i>Courts of Justice Act</i> (Ontario), as it may change from time to time.”

SC5 *NEW* ARTICLE A-9 – CONFLICT OF INTEREST

	A-9	<u>Add</u> new ARTICLE A-9 CONFLICT OF INTEREST as follows: “ARTICLE A-9 CONFLICT OF INTEREST 9.1 The <i>Contractor</i>, <i>Subcontractors</i> and <i>Suppliers</i> and any of their respective advisors, partners, directors, officers, employees, agents, and volunteers shall not engage in any activity or provide any services where such activity or the provision of such services creates a conflict of interest (actually or potentially, in the sole opinion of the <i>Owner</i>) with the provision of the <i>Work</i> pursuant to the <i>Contract</i>. The <i>Contractor</i> acknowledges and agrees that a conflict of interest, as described in this Article A-9, includes, but is not limited to, the use of <i>Confidential Information</i> where the <i>Owner</i> has not specifically authorized such use. 9.2 The <i>Contractor</i> shall disclose to the <i>Owner</i>, 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 <i>Subcontractor</i> or <i>Supplier</i> that is directly or indirectly affiliated with or related to the <i>Contractor</i>. 9.3 The <i>Contractor</i> covenants and agrees that it will not hire or retain the services of any employee or previous employee of the <i>Owner</i> where to do so constitutes a breach by such employee or previous employee of the <i>Owner’s</i> conflict of interest policy, as it

		may be amended from time to time, until after completion of the <i>Work</i> under the <i>Contract</i>. 9.4 It is of the essence of the <i>Contract</i> that the <i>Owner</i> shall not have direct or indirect liability to any <i>Subcontractor or Supplier</i>, and that the <i>Owner</i> relies on the maintenance of an arm's-length relationship between the <i>Contractor</i> and its <i>Subcontractors and Suppliers</i>. Consistent with this fundamental term of the <i>Contract</i>, the <i>Contractor</i> will not enter into any agreement or understanding with any <i>Subcontractor or Supplier</i>, whether as part of any contract or any written or oral collateral agreement, pursuant to which the parties thereto agree to cooperate in the presentation of a claim for payment against the <i>Owner</i>, directly or through the <i>Contractor</i>, where such claim is, in whole or in part, in respect of a disputed claim by the <i>Subcontractor or Supplier</i> against the <i>Contractor</i>, where the payment to the <i>Subcontractor or Supplier</i> by the <i>Contractor</i> is agreed to be conditional or contingent on the ability to recover those amounts or a portion thereof from the <i>Owner</i>, failing which the <i>Contractor</i> shall be saved harmless from all or a portion of those claims. The <i>Contractor</i> acknowledges that any such agreement would undermine the required arm's-length relationship and constitute a conflict of interest. For greater certainty, the <i>Contractor</i> shall only be entitled to advance claims against the <i>Owner</i> for amounts pertaining to <i>Subcontractor or Supplier</i> claims where the <i>Contractor</i> has actually paid or unconditionally acknowledged liability for those claims or where those claims are the subject of litigation or binding arbitration between the <i>Subcontractor or Supplier</i> and the <i>Contractor</i> has been found liable for those claims. 9.5 Notwithstanding 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, a breach of this Article A-9 by the <i>Contractor</i>, any of the <i>Subcontractors</i>, or any of their respective advisors, partners, directors, officers, employees, agents, and volunteers shall entitle the <i>Owner</i> to terminate the <i>Contract</i>, in addition to any other rights and remedies that the <i>Owner</i> has in the <i>Contract</i>, in law, or in equity."

SC4 *NEW* ARTICLE A-10 TIME OF THE ESSENCE

	Article A-10	<u>Add</u> the following new Article A-10 as follows: "ARTICLE A-10 TIME OF THE ESSENCE 10.1 It is agreed that one of the reasons the <i>Contractor</i> was selected by the <i>Owner</i> for this <i>Contract</i> is the <i>Contractor's</i> representation and covenant that it will attain <i>Substantial Performance, Occupancy</i> (if applicable), and <i>Ready-for-Takeover</i> within the <i>Contract Time</i> stated in Article A-1 of this <i>Contract</i>. 10.2 The <i>Contractor</i> acknowledges and agrees that it is responsible to marshal its resources and those of its <i>Subcontractors and Suppliers</i> in a manner which will permit timely attainment of <i>Substantial Performance, Occupancy</i> (if applicable), and <i>Ready-for-Takeover</i>. The <i>Contractor</i> agrees that time is of the essence of this <i>Contract</i>."

SC7 DEFINITIONS

Revisions to Existing Definitions

	Consultant	<u>Amend</u> the definition of “Consultant” by <u>adding</u> the following to the end of the definition: “For the purposes of the <i>Contract</i>, the terms “<i>Consultant</i>”, “<i>Architect</i>” and “<i>Engineer</i>” shall be considered synonymous.”
	Payment Legislation/Construction Act	<u>Delete</u> the Definition of <i>Payment Legislation</i> and replace it with “Construction Act” as follows: “Construction Act <i>Construction Act</i> means the <i>Construction Act</i>, R.S.O. 1990, c. C.30, as amended, including all regulations passed under it that are enforceable as of the date of execution of this <i>Contract</i>. For certainty, the first procurement process for the <i>Project</i> (i.e., the “improvement” as that term is defined in the <i>Construction Act</i>) was commenced on or after October 1, 2019.”
	Ready-for-Takeover	<u>Amend</u> the Definition of <i>Ready-for-Takeover</i> by deleting all the words after “as verified” and replacing them with “and approved by the <i>Owner</i>.”
New Definitions		
	Adjudication	<u>Add</u> the following definition: “Adjudication <i>Adjudication</i> means construction dispute interim adjudication as defined under the <i>Construction Act</i>.”
	Close-Out Documentation	<u>Add</u> the following new definition: “Close-Out Documentation <i>Close-Out Documentation</i> has the meaning given to it under GC 5.4.2.”
	Confidential Information	<u>Add</u> the following definition: “Confidential Information <i>Confidential Information</i> means all the information or material of the <i>Owner</i> 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 <i>Contractor</i> at any time, but <i>Confidential Information</i> shall not include information that: .1 is or becomes generally available to the public without fault or breach on the part of the <i>Contractor</i>, including without limitation breach of any duty of confidentiality owed by the <i>Contractor</i> to the <i>Owner</i> or to any third party, but only after that information becomes generally available to the public; .2 the <i>Contractor</i> can demonstrate to have been rightfully obtained by the <i>Contractor</i> from a third party who had the right to transfer or disclose it to the <i>Contractor</i> free of any obligation of confidence; .3 the <i>Contractor</i> can demonstrate to have been rightfully known to or in the possession of the <i>Contractor</i> at the time of disclosure, free of any obligation of confidence; or

		.4 is independently developed by the <i>Contractor</i> without use of any <i>Confidential Information</i> ."
	Construction Schedule	<u>Add</u> the following definition: "Construction Schedule <i>Construction Schedule</i> means the schedule for the performance of the <i>Work</i> provided by the <i>Contractor</i>, and approved by the <i>Owner</i>, pursuant to GC 3.4.1, including any amendments to the <i>Construction Schedule</i> made pursuant to the <i>Contract Documents</i>."
	Construction Schedule Update	<u>Add</u> the following definition: "Construction Schedule Update <i>Construction Schedule Update</i> means an update to the <i>Construction Schedule</i> by the <i>Contractor</i> using Microsoft Project (or other approved scheduling software) that accurately depicts the progress of the <i>Work</i> relative to the critical path established in the <i>Construction Schedule</i> approved in GC 3.5.1 (or any approved successor <i>Construction Schedule</i>), aligns with the currently approved date for <i>Substantial Performance of the Work</i>, shows up-to-date projected major activity sequences and durations, and shows any changes or delays in anticipated completion dates of major activities in the <i>Work</i> relative to the last <i>Construction Schedule Update</i>, and includes the following minimum deliverables: (a) a record version of the updated <i>Construction Schedule</i> in .pdf format; (b) an editable copy of the updated original digital file of the <i>Construction Schedule</i> (e.g., .mpp format files for Microsoft Project)."
	Direct Costs	<u>Add</u> the following definition: "Direct Costs <i>Direct Costs</i> are the reasonable costs of performing the contract or subcontract including costs related to the additional supply of services or materials (including equipment rentals), insurance and surety bond premiums, and costs resulting from seasonal conditions, that would not have been incurred, but do not include indirect damages suffered, such as loss of profit, productivity or opportunity, or any head office overhead costs."
	EFT	<u>Add</u> the following definition: "EFT <i>EFT</i> has the definition given to it under GC 5.3.2."
	Excess Soil	<u>Add</u> the following definition: "Excess Soil <i>Excess Soil</i> means "excess soil" as that term is defined under section 3 of the <i>Excess Soil Regulation</i>."
	Excess Soil Regulation	<u>Add</u> the following Definition: "Excess Soil Regulation

		<i>Excess Soil Regulation</i> means O. Reg. 406/19: On-Site and Excess Soil Management to the <i>Environmental Protection Act</i> , R.S.O. 1990, c. E.19.”
	Final Pre-Invoice Submission Meeting	<u>Add</u> the following new definition: “Final Pre-Invoice Submission Meeting <i>Final Pre-Invoice Submission Meeting</i> has the meaning given to it in GC 5.5.1.”
	Force Majeure	<u>Add</u> the following definition: “Force Majeure <i>Force Majeure</i> means any cause, unknown at the effective date of the <i>Contract</i> and beyond either party’s control, other than financial difficulties, bankruptcy or insolvency, which prevents the performance by a party, or both, of any of their respective obligations under the <i>Contract</i> and the event of <i>Force Majeure</i> did not arise from a party’s default and could not be avoided or mitigated by the exercise of reasonable effort or foresight. <i>Force Majeure</i> includes <i>Labour Disputes</i> ; fire; unusual delay by common carriers or unavoidable casualties; delays in obtaining third-party licences, permits, agreements, or approvals (excluding approvals of any <i>Subcontractors</i> or <i>Suppliers</i> of any tier); civil disturbance; emergency acts, orders, legislation, regulations or directives of any government or other public authority; acts of a public enemy; war; riot; sabotage; blockage; embargo; lightning; earthquake; adverse weather conditions but only if substantially beyond the weather norms of the <i>Place of the Work</i> ; acts of God; or declared epidemic or pandemic outbreak or other public health emergency (e.g. SARS, COVID-19).”
	Install	<u>Add</u> the following definition: “Install <i>Install</i> means install and connect. <i>Install</i> has this meaning whether or not the first letter is capitalized.”
	Labour Dispute	<u>Add</u> the following definition: “Labour Dispute <i>Labour Dispute</i> means any lawful or unlawful labour problems, work stoppage, labour disruption, strike, job action, slow down, lock-outs, picketing, refusal to work or continue to work, refusal to supply materials, cessation or work or other labour controversy which does, or might, affect the <i>Work</i> .”
	Notice of Non-Payment	<u>Add</u> the following definition: “Notice of Non-Payment <i>Notice of Non-Payment</i> means a notice of non-payment of holdback (Form 6) or a notice of non-payment (Form 1.1) under the <i>Act</i> , as applicable to the circumstances.”
	OHS A	<u>Add</u> the following definition: “OHS A

		<i>OHS</i> A means the <i>Occupational Health and Safety Act</i> , R.S.O. 1990, c. O.1, as amended, including all regulations thereto."
	Overhead	<u>Add</u> the following definition: "Overhead <i>Overhead</i> 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 <i>Place of the Work</i>; all requirements of Division 1, including but not limited to submittals, warranty, quality control, calculations, testing and inspections; meals and accommodations; and, tools, expendables and clean-up costs."
	Payment Period	<u>Add</u> the following definition: "Payment Period <i>Payment Period</i> has the definition given to it under GC 5.2.1."
	Pre-Invoice Submission Meeting	<u>Add</u> the following definition: "Pre-Invoice Submission Meeting <i>Pre-Invoice Submission Meeting</i> has the definition given to it under GC 5.2.1."
	Proper Invoice	<u>Add</u> the following definition: "Proper Invoice <i>Proper Invoice</i> means a "proper invoice" as that term is defined in Section 6.1 of the <i>Act</i>, including the minimum requirements set out in Appendix "1" of the Supplementary Conditions."
	Proper Invoice Submission Date	<u>Add</u> the following definition: "Proper Invoice Submission Date <i>Proper Invoice Submission Date</i> has the definition given to it under GC 5.2.2.1."
	Request for Information (RFI)	<u>Add</u> the following definition: "Request for Information (RFI) <i>Request for Information</i> or <i>RFI</i> means written documentation sent by the <i>Contractor</i> to the <i>Owner</i> or to the <i>Owner's</i> representative or the <i>Consultant</i> requesting written clarification(s) and/or interpretation(s) of the <i>Drawings</i> and/or <i>Specifications</i>, <i>Contract</i> requirements and/or other pertinent information required to complete the <i>Work</i> of the <i>Contract</i> without applying for a change or changes to the <i>Work</i>."

GENERAL CONDITIONS OF THE STIPULATED PRICE CONTRACT

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.

PART 1 GENERAL PROVISIONS

SC6 GC 1.1 CONTRACT DOCUMENTS

	1.1.3	<u>Delete</u> GC 1.1.3 in its entirety and <u>replace</u> it with the following: "1.1.3 The <i>Contractor</i> shall review the <i>Contract Documents</i> and shall report promptly to the <i>Consultant</i> any error, inconsistency, or omission the <i>Contractor</i> may discover. Such review by the <i>Contractor</i> shall be undertaken with the standard of care described in GC 3.13.1. Except for its obligation to make such review and report the result, the <i>Contractor</i> does not assume any responsibility to the <i>Owner</i> or to the <i>Consultant</i> for the accuracy of the <i>Contract Documents</i>. Provided it has exercised the degree of care and skill described in this GC 1.1.3, the <i>Contractor</i> shall not be liable for damage or costs resulting from such errors, inconsistencies, or omissions in the <i>Contract Documents</i>, which the <i>Contractor</i> could not reasonably have discovered through the exercise of the required standard of care."
	1.1.4	<u>Delete</u> GC 1.1.4 in its entirety and <u>replace</u> it with the following: "1.1.4 Except for the obligation to complete the review prescribed in GC 1.1.3, and report the results as set out in this GC 1.1.4, the <i>Contractor</i> is not responsible for errors, omissions or inconsistencies in the <i>Contract Documents</i>. If there are errors, omissions or inconsistencies discovered by or made known to the <i>Contractor</i> as part of its review under GC 1.1.3 or at any time during the performance of the <i>Work</i>, the <i>Contractor</i> shall immediately notify the <i>Consultant</i>, and request instructions, a <i>Supplemental Instruction</i>, <i>Change Order</i>, or <i>Change Directive</i>, as the case may require, and shall not proceed with the <i>Work</i> affected until the <i>Contractor</i> has received corrected or additional information from the <i>Consultant</i>. The <i>Contractor</i> shall not be liable for damage or costs resulting from such errors, inconsistencies, or omissions in the <i>Contract Documents</i>, which the <i>Contractor</i> could not reasonably have discovered through the exercise of care and skill described in GC 3.13."
	1.1.5.1	<u>Delete</u> GC 1.1.5.1 and <u>replace</u> with the following: "1 the order of priority of documents, from highest to lowest, shall be: .1 Supplementary Conditions; .2 the Agreement between the Owner and the Contractor; .3 the Definitions; .4 the General Conditions; .5 Division 01 of the <i>Specifications</i> .6 technical <i>Specifications</i>; .7 material and finishing schedules; and .8 the <i>Drawings</i>.
	1.1.5.5	<u>Delete</u> GC 1.1.5.5 and <u>replace</u> with the following: ".5 Noted materials and annotations on the <i>Drawings</i> shall govern over the graphic representation of the <i>Drawings</i>."
	1.1.5.6 to 1.1.5.8	<u>Add</u> the following new GC 1.1.5.6 to 1.1.5.8 as follows: ".6 Finishes in the room finish schedules shall govern over those shown on the <i>Drawings</i>. .7 Architectural drawings shall have precedence over structural, plumbing, mechanical, electrical and landscape drawings insofar as outlining, determining and interpreting conflicts over the required design intent of all architectural layouts and architectural

		elements of construction, it being understood that the integrity and installation of the systems designed by the <i>Consultant</i> or its sub-<i>Consultants</i> are to remain with each of the applicable drawing disciplines. .8 Should reference standards contained in the <i>Specifications</i> conflict with the <i>Specifications</i>, the <i>Specifications</i> shall govern. Should reference standards and <i>Specifications</i> conflict with each other or if certain requirements of the <i>Specifications</i> conflict with other requirements of the <i>Specifications</i>, the more stringent requirements shall govern.”
	1.1.9	<u>Add</u> the following to the end of GC 1.1.9: “The <i>Specifications</i> 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 <i>Contract Documents</i> will be construed to place responsibility on the <i>Owner</i> or the <i>Consultant</i> to settle disputes among the <i>Subcontractors</i> and <i>Suppliers</i> with respect to such divisions. The <i>Drawings</i> are, in part, diagrammatic and are intended to convey the scope of the <i>Work</i> and indicate general and appropriate locations, arrangements and sizes of fixtures, equipment, outlets and other elements. The <i>Contractor</i> shall obtain more accurate information about the locations, arrangements and sizes from study and coordination of the <i>Drawings</i>, including <i>Shop Drawings</i> and shall become familiar with conditions and spaces affecting those matters before proceeding with the <i>Work</i>. Where site conditions require reasonable minor changes where the change requires only the additional labour two hours or less, the <i>Contractor</i> shall make such changes at no additional cost to the <i>Owner</i>. Similarly, where known conditions or existing conditions interfere with new installation and require relocation, the <i>Contractor</i> shall include such relocation in the <i>Work</i>. The <i>Contractor</i> shall arrange and install fixtures and equipment in such a way as to conserve as much headroom and space as possible. The schedules are those portions of the <i>Contract Documents</i>, wherever located and whenever issued, which compile information of similar content and may consist of drawings, tables and/or lists.”
	1.1.12	<u>Add</u> new paragraphs 1.1.12 and 1.1.13 as follows: “1.1.12 The <i>Consultant</i>, on behalf of the <i>Owner</i> shall provide the <i>Contractor</i> without charge, twelve (12) copies of the <i>Contract Documents</i>, exclusive of those required by jurisdictional authorities and the executed <i>Contract Documents</i>. Additional copies can be purchased by the <i>Contractor</i> at the <i>Consultant's</i> cost of reproduction, handling and sales tax. 1.1.13 The <i>Contractor</i> shall keep one copy of the current <i>Contract Documents</i>, <i>Supplemental Instructions</i>, contemplated <i>Change Orders</i>, <i>Change Orders</i>, <i>Change Directives</i>, cash allowance disbursement authorizations, reviewed <i>Shop Drawings</i>, submittals, reports and records of meeting at the <i>Place of the Work</i>, in good order and available to the <i>Owner</i> and <i>Consultant</i>.”

SC6 GC 1.3 RIGHTS AND REMEDIES

	1.3.2	In paragraph 1.3.2 <u>delete</u> the word “No” from the beginning of the paragraph and <u>replace</u> it with the words: “Except with respect to the requirements set out in paragraphs 6.4.1, 6.5.4, 6.6.1 and 8.3.2, no...”

SC7 *NEW* GC 1.5 EXAMINATION OF DOCUMENTS AND SITE

	1.5	<u>Add</u> new GC 1.5 – EXAMINATION OF DOCUMENTS AND SITE as follows: “GC 1.5 EXAMINATION OF DOCUMENTS AND SITE 1.5.1 The <i>Contractor</i> declares and represents that in tendering for the <i>Work</i>, and in entering into a <i>Contract</i> with the <i>Owner</i> for the performance of the <i>Work</i>, it has investigated for itself the character of the <i>Work</i> to be done, based on information generally available from a visit to the <i>Place of the Work</i> and to the standard set out under GC 3.14.1 and further represents and warrants and acknowledges that it considered and took into account in the <i>Contract Price</i> all reasonably known impacts and restrictions arising from the COVID-19 pandemic, including without limitation corresponding legislative changes that may impact performance of the <i>Project</i>, various weather conditions that may affect the <i>Work</i>, the availability of supplies and labour or other conditions or risks that the <i>Contractor</i> knew about or reasonably ought to have known about prior to the date of the <i>Contract</i>. The <i>Contractor</i> has assumed and does hereby assume all risk of known conditions now existing or arising in the course of the <i>Work</i> which might or could make the <i>Work</i>, or any items thereof more expensive in character, or more onerous to fulfil, than was contemplated or known when the tender was made or the <i>Contract</i> signed. 1.5.2 The <i>Contractor</i> also declares that prior to commencement of the <i>Work</i>, where in tendering for the <i>Work</i> and in entering into this <i>Contract</i>, the <i>Contractor</i> relied upon information furnished by the <i>Owner</i> or any of its agents or servants respecting the nature or confirmation of the ground at the site of the <i>Work</i>, the <i>Contractor</i> shall review to the standard specified in GC 3.14.1, the accuracy of the information furnished by the <i>Owner</i>. If a condition is materially different than what is stated in the information furnished by the <i>Owner</i>, the <i>Contractor</i> shall, no later than five (5) <i>Working Days</i> after the first observation of such condition(s), deliver to the <i>Owner</i> and to the <i>Consultant</i> a <i>Notice in Writing</i> specifying the materially different condition and the <i>Contractor</i> shall not proceed with the affected part of the <i>Work</i> until receiving written direction from the <i>Owner</i> or the <i>Consultant</i>. Where the <i>Contractor</i> fails to provide prompt <i>Notice in Writing</i> in accordance with this GC 1.5.2, the <i>Contractor</i> expressly waives and releases the <i>Owner</i> from all claims with respect to the said information with respect to the <i>Work</i>.

PART 2 ADMINISTRATION OF THE CONTRACT

SC9 GC 2.2 ROLE OF THE CONSULTANT

	2.2.5	<u>Delete</u> paragraph 2.2.4 and <u>replace</u> it with the following: “2.2.4 Upon receipt of an application for payment that satisfies the requirement of a <i>Proper Invoice</i>, based on the <i>Consultant</i>'s observations and evaluation of the <i>Contractor</i>'s application for payment, the <i>Consultant</i> will determine the amounts owing to the <i>Contractor</i> under the <i>Contract</i> and will issue certificates for payment as provided in Article A-5 - PAYMENT, GC 5.3 - PAYMENT, GC 5.4 SUBSTANTIAL PERFORMANCE OF THE WORK AND PAYMENT OF HOLDBACK, and GC 5.5 - FINAL PAYMENT. If the <i>Consultant</i> determines that the amount payable to the <i>Contractor</i> differs from the amount stated in a <i>Proper Invoice</i>, the <i>Consultant</i> shall notify the <i>Owner</i> as provided in GC 5.3.1.2 and prepare a draft of the applicable <i>Notice of Non-Payment</i> for the amount in dispute.”
	2.2.6	In the first sentence of paragraph 2.2.6, <u>delete</u> the words “Except with respect to GC 5.1 – FINANCING INFORMATION REQUIRED OF THE OWNER”.

	2.2.12	At paragraph 2.2.12, <u>insert</u> the following at end of that paragraph: “If, in the opinion of the <i>Contractor</i> , the <i>Supplemental Instruction</i> involves an adjustment in the <i>Contract Price</i> or in the <i>Contract Time</i> , it shall, within ten (10) <i>Working Days</i> of receipt of a <i>Supplemental Instruction</i> , provide the <i>Consultant</i> with a notice in writing to that effect. Failure to provide written notification within the time stipulated in this paragraph 2.2.12 shall be deemed an acceptance of the <i>Supplemental Instruction</i> by the <i>Contractor</i> , without any adjustment in the <i>Contract Price</i> or <i>Contract Time</i> .”

SC12 GC 2.3 REVIEW AND INSPECTION OF THE WORK

	2.3.2	<u>Amend</u> paragraph 2.3.2 by <u>adding</u> the words “and <i>Owner</i> ” after the words “ <i>Consultant</i> ” in the second and third lines.
	2.3.3	<u>Delete</u> paragraph 2.3.3 in its entirety and <u>replace</u> it with the following: “2.3.3 The <i>Contractor</i> shall furnish promptly two copies to the <i>Consultant</i> and one copy to the <i>Owner</i> of all certificates and inspection reports relating to the <i>Work</i> .”
	2.3.4	In paragraph 2.3.4 <u>add</u> the word “review” after the word “inspections” in the first and second lines of paragraph 2.3.4.
	2.3.5	In paragraph 2.3.5 in the first line after the word “ <i>Consultant</i> ”, <u>add</u> “or the <i>Owner</i> ”.
	2.3.8	<u>Add</u> a new paragraph 2.3.8 as follows: “2.3.8 The <i>Consultant</i> will conduct periodic reviews of the <i>Work</i> in progress, to determine general conformance with the requirements of the <i>Contract Documents</i> . Such reviews, or lack thereof, shall not give rise to any claims by the <i>Contractor</i> in connection with construction means, methods, techniques, sequences and procedures, nor in connection with construction safety at the <i>Place of Work</i> , responsibility for which belongs exclusively to the <i>Contractor</i> .”

SC11 GC 2.4 DEFECTIVE WORK

	2.4.1	<u>Amend</u> GC 2.4.1 by inserting “, the <i>Owner</i> and/or its agent” in the first sentence following “rejected by the <i>Consultant</i> ”.
	2.4.1.1 to 2.4.1.2	<u>Add</u> new paragraphs 2.4.1.1 and 2.4.1.2 as follows: “2.4.1.1 The <i>Contractor</i> shall rectify, in a manner acceptable to the <i>Consultant</i> and to the <i>Owner through the Consultant</i> all defective work and deficiencies throughout the <i>Work</i> , whether or not they are specifically identified by the <i>Consultant</i> . 2.4.1.2 The <i>Contractor</i> shall prioritize the correction of any defective work, which, in the sole discretion of the <i>Owner through the Consultant</i> , adversely affects the day to day operations of the <i>Owner</i> or which, in the sole discretion of the <i>Consultant</i> , adversely affects the progress of the <i>Work</i> .”
	2.4.2	<u>Delete</u> paragraph 2.4.2 in its entirety and <u>replace</u> it with the following: “2.4.2 The <i>Contractor</i> shall promptly pay the <i>Owner</i> for costs incurred by the <i>Owner</i> , the <i>Owner’s</i> own forces or the <i>Owner’s</i> other contractors, for work destroyed or

		damaged or any alterations necessitated by the <i>Contractor's</i> removal, replacement or re-execution of defective work."
	2.4.4	<u>Add</u> new paragraph 2.4.4 as follows: "2.4.4 Neither acceptance of the <i>Work</i> by the <i>Consultant</i> or the <i>Owner</i> , nor any failure by the <i>Consultant</i> or the <i>Owner</i> to identify, observe or warn of defective <i>Work</i> or any deficiency in the <i>Work</i> shall relieve the <i>Contractor</i> from the sole responsibility for rectifying such defect or deficiency at the <i>Contractor's</i> sole cost, even where such failure to identify, observe or warn is negligent."

PART 3 EXECUTION OF THE WORK

SC12 GC 3.1 CONTROL OF THE WORK

	3.1.2	Amend paragraph 3.1.2 by <u>inserting</u> the words "Construction Schedule" after the word "sequences".
	3.1.3 & 3.1.4	<u>Add</u> new paragraphs 3.1.3 and 3.1.4 as follows: "3.1.3 Prior to commencing individual procurement, fabrication and construction activities, the <i>Contractor</i> shall verify at the <i>Place of the Work</i> , all relevant measurements and levels necessary for proper and complete fabrication, assembly and installation of the <i>Work</i> and shall further carefully compare such field measurements and conditions with the requirements of the <i>Contract Documents</i> . Where dimensions are not included or exact locations are not apparent, the <i>Contractor</i> shall immediately notify the <i>Consultant</i> in writing and obtain written instructions from the <i>Consultant</i> before proceedings with any part of the affected <i>Work</i> . 3.1.4 Notwithstanding the provisions of paragraphs 3.1.1 and 3.1.2, the <i>Owner</i> shall have access to the site at all times to monitor all aspects of construction. Such access shall in no circumstances affect the obligations of the <i>Contractor</i> to fulfill its contractual obligations."

SC13 GC 3.2 CONSTRUCTION BY OWNER OR OTHER CONTRACTORS

	3.2.2.1	<u>Delete</u> subparagraph 3.2.2.1 and <u>replace</u> it with "[Intentionally left blank]".
	3.2.3.2	<u>Delete</u> subparagraph 3.2.3.2 and <u>replace</u> it with the following: ".2 co-ordinate and schedule the activities and work of other contractors and the <i>Owner's</i> own forces, including where other contractors or the <i>Owner's</i> own forces are used after the <i>Owner</i> and the <i>Contractor</i> cannot reach agreement on the value of a change, with the <i>Work</i> of the <i>Contractor</i> and connect as specified or shown in the <i>Contract Documents</i> ."
	3.2.3.4	<u>Delete</u> the period at the end of subparagraph 3.2.3.4 and <u>replace</u> it with a semi-colon.
	3.2.3.5	<u>Add</u> new subparagraph 3.2.3.5 as follows: ".5 Subject to GC 9.4 CONSTRUCTION SAFETY, for the <i>Owner's</i> own forces and for other contractors, assume overall responsibility for compliance with all aspects of the applicable health and safety legislation in force at the <i>Place of the Work</i> , including all of the responsibilities of the "constructor", pursuant to the <i>OHSA</i> ."

SC14 GC 3.3 TEMPORARY WORK

	3.3.2	In paragraph 3.3.2, in the second line after the words “where required by law”, insert “or by the <i>Consultant</i> ”.

SC15 GC 3.4 CONSTRUCTION SCHEDULE

	3.4.1	<u>Delete</u> GC 3.4.1 in its entirety and <u>replace</u> it with the following: “3.4.1 The <i>Contractor</i> shall: 1 within five (5) calendar days of receiving written confirmation of the award of the <i>Contract</i>, prepare and submit to the <i>Owner</i> and the <i>Consultant</i> for their review and approval, a construction schedule in the format indicated below that indicates the timing of the activities of the <i>Work</i> and provides sufficient detail of the critical events and their inter-relationship to demonstrate the <i>Work</i> will be performed in conformity with the <i>Contract Time</i> and in accordance with the <i>Contract Documents</i>. Such schedule is to include a delivery schedule for <i>Products</i> whose delivery is critical to the schedule for the <i>Work</i> or are required by the <i>Contract</i> to be included in a <i>Products</i> delivery schedule. The <i>Contractor</i> shall employ construction scheduling software, being the latest version of “Microsoft Project”, that permits the progress of the <i>Work</i> to be monitored in relation to the critical path established in the schedule. The <i>Contractor</i> shall provide such schedule and any successor or revised schedules in both original digital file format (e.g., .mpp format for Microsoft Project), portable data file (PDF) format, and hard copy. Once accepted by the <i>Owner</i> and the <i>Consultant</i>, the construction schedule submitted by the <i>Contractor</i> shall become the baseline “Construction Schedule”; .2 provide the expertise and resources, such resources including manpower and equipment, as are necessary on a best efforts basis to maintain progress under the accepted baseline <i>Construction Schedule</i> or revised construction schedule accepted by the <i>Owner</i> pursuant to GC 3.4 CONSTRUCTION SCHEDULE, which includes without limitation, the <i>Contractor</i>’s use of all possible and, if necessary, extraordinary measures, to bring the progress of the <i>Work</i> into compliance with the <i>Construction Schedule</i>, such as (i) increasing the presence of its own forces at the <i>Place of the Work</i>; (ii) directing any <i>Subcontractors</i> or <i>Suppliers</i> to increase their labour forces and equipment; (iii) working overtime and extra shifts; and (iv) providing any additional supervision and coordination of the <i>Project</i>, all at the <i>Contractor</i>’s own cost and expense save and except where GC 6.5.1, 6.5.2, or 6.5.3 apply; and, .3 monitor the progress of the <i>Work</i> on a weekly basis relative to the baseline <i>Construction Schedule</i>, or any revised <i>Construction Schedule</i> accepted by the <i>Owner</i> pursuant to GC 3.4 CONSTRUCTION SCHEDULE, deliver a <i>Construction Schedule Update</i> to the <i>Consultant</i> and <i>Owner</i> with each application for payment, at a minimum, or as may be reasonably required by the <i>Consultant</i> and advise the <i>Consultant</i> and the <i>Owner</i> weekly in writing of any variation from the baseline or slippage in the schedule; and, .4 if after applying the expertise and resources required under paragraph 3.4.1.2, the <i>Contractor</i> forms the opinion that the slippage in schedule reported in paragraph 3.4.1.3 cannot be recovered by the <i>Contractor</i>, it shall, in the same notice provided under paragraph 3.4.1.3, indicate to the <i>Consultant</i> if the <i>Contractor</i> intends to apply for an extension of <i>Contract Time</i> as provided in PART 6 —CHANGES IN THE WORK; and, .5 ensure that the <i>Contract Price</i> shall include all costs required to phase or stage the <i>Work</i>.”

	3.4.2	<u>Add</u> new GC 3.4.2 and GC 3.4.3 as follows: “3.4.2 If, at any time, it should appear to the <i>Owner</i> or the <i>Consultant</i> that the actual progress of the <i>Work</i> is behind schedule or is likely to become behind schedule, or if the <i>Contractor</i> has given notice of such to the <i>Owner</i> or the <i>Consultant</i> pursuant to GC 3.4.1.3, the <i>Contractor</i> shall, either at the request of the <i>Owner</i> or the <i>Consultant</i>, or following giving notice pursuant to GC 3.4.1.3, take appropriate steps to cause the actual progress of the <i>Work</i> to conform to the schedule or minimize the resulting delay. Within 5 calendar days of the request by the <i>Owner</i> or the <i>Consultant</i> or the notice being given pursuant to GC 3.4.1.3, the <i>Contractor</i> shall produce and present to the <i>Owner</i> and the <i>Consultant</i> a plan demonstrating how the <i>Contractor</i> will recover the performance of the <i>Work</i> to align with the currently approved <i>Construction Schedule</i>. 3.4.3 The <i>Contractor</i> shall not amend the <i>Construction Schedule</i> without the prior written consent of the <i>Owner</i>.. Any revisions to the <i>Construction Schedule</i> approved by the <i>Owner</i> shall not be deemed to be an extension of the <i>Contract Time</i>. All requests by the <i>Contractor</i> for a revision to the <i>Construction Schedule</i> that include an extension to the <i>Contract Time</i> must be approved by the <i>Owner</i> through an executed <i>Change Order</i>.”

SC18 GC 3.5 SUPERVISION

	3.5.1	<u>Delete</u> GC 3.5.1 and <u>replace</u> it with the following: “3.5.1 The <i>Contractor</i> shall employ a competent full-time superintendent, acceptable to the <i>Owner</i> and <i>Consultant</i>, who shall be in full time attendance at the <i>Place of the Work</i> while the <i>Work</i> is being performed. The superintendent shall not be changed by the <i>Contractor</i> without valid reason which shall be provided in writing and shall not be changed without prior consultation with and agreement by the <i>Owner</i> and the <i>Consultant</i>. The <i>Contractor</i> shall replace the superintendent within 7 <i>Working Days</i> of the <i>Owner’s</i> written notification, if the superintendent’s performance is not acceptable to the <i>Owner</i>. The <i>Contractor</i> shall provide the <i>Owner</i> and the <i>Consultant</i> with the names, addresses and telephone numbers of the superintendent referred to in this GC 3.5.1 and other responsible persons who may be contacted for emergency and other reasons during non-working hours. .”
	3.5.2	<u>Delete</u> GC 3.5.2 and <u>replace</u> it with the following: “3.5.2 The superintendent, and any project manager appointed by the <i>Contractor</i>, shall represent the <i>Contractor</i> at the <i>Place of the Work</i> and shall have full authority to act on written instructions given by the <i>Consultant</i> and/or the <i>Owner</i>. Instructions given to the superintendent or the project manager shall be deemed to have been given to the <i>Contractor</i> and both the superintendent and any project manager shall have full authority to act on behalf of the <i>Contractor</i> and bind the <i>Contractor</i> in matters related to the <i>Contract</i>.”
	3.5.3 to 3.5.6	<u>Add</u> new GC 3.5.3, 3.5.4, 3.5.5 and 3.5.6 as follows: “3.5.3 The <i>Owner</i> may, at any time during the course of the <i>Work</i>, request the replacement of the appointed representative(s). Immediately upon receipt of the request, the <i>Contractor</i> shall make arrangements to appoint an acceptable replacement, which is approved by the <i>Owner</i>. 3.5.4 The supervisory staff assigned to the <i>Project</i> shall also be fully competent to implement efficiently all requirements for scheduling, coordination, field engineering,

		reviews, inspections and submittals defined in the <i>Specifications</i> , and have a minimum 5 years documented “Superintendent/Project Management” experience.
	3.5.5	The <i>Consultant and Owner</i> shall reserve the right to review the record of experience and credentials of supervisory staff assigned to the <i>Project</i> prior to commencement of the <i>Work</i> .
	3.5.6	A superintendent assigned to the <i>Work</i> shall be “Gold Seal Certified” as per the Canadian Construction Association; or a superintendent that can demonstrate the requisite experience and success related to the <i>Project</i> to the sole satisfaction of the <i>Owner</i> .”

SC18 GC 3.6 SUBCONTRACTORS AND SUPPLIERS

	3.6.1.1	In paragraph 3.6.1.1 <u>add</u> to the end of the second line the words “including any warranties and service agreements which extend beyond the term of the <i>Contract</i> .”
	3.6.1.2	In subparagraph 3.6.1.2 after the words “the <i>Contract Documents</i> ” <u>add</u> the words “including any required surety bonding”.
	3.6.2	<u>Delete</u> paragraph 3.6.2. in its entirety and <u>replace</u> it with the following: “3.6.2 The substitution of any <i>Subcontractor</i> and/or <i>Suppliers</i> after submission of the <i>Contractor’s</i> bid will not be accepted unless a valid reason is given in writing to and approved by the <i>Owner</i> , whose approval may be arbitrarily withheld. The reason for substitution must be provided to the <i>Owner</i> and to the original <i>Subcontractor</i> and/or <i>Supplier</i> and the <i>Subcontractor</i> and/or <i>Supplier</i> shall be given the opportunity to reply to the <i>Contractor</i> and <i>Owner</i> . The <i>Contractor</i> shall be fully aware of the capability of each <i>Subcontractor</i> and/or <i>Supplier</i> included in its bid, including but not limited to technical ability, financial stability and ability to maintain the proposed construction schedule.”
	3.6.7, 3.6.8, 3.6.9 & 3.6.10	<u>Add</u> new paragraphs 3.6.7, 3.6.8, 3.6.9, and 3.6.10 as follows: “3.6.7 The <i>Contractor</i> represents and warrants that it has confirmed the availability of its <i>Subcontractors</i> for the <i>Project</i> and, in particular, for the performance of their respective portions of the <i>Work</i> to ensure completion of the <i>Project</i> within the <i>Contract Price</i> and the <i>Contract Time</i> . 3.6.8 The <i>Consultant</i> or the <i>Owner</i> , acting reasonably, may from time to time require the <i>Contractor</i> to remove from the <i>Project</i> any personnel of the <i>Contractor</i> , including project managers, superintendents or <i>Subcontractors</i> . Such persons shall be replaced by the <i>Contractor</i> in a timely fashion to the satisfaction of the <i>Consultant</i> or the <i>Owner</i> , as the case may be, at no cost to the <i>Owner</i> . 3.6.9 Where provided in the <i>Contract</i> , the <i>Owner</i> may assign to the <i>Contractor</i> , and the <i>Contractor</i> agrees to accept, any contract procured by the <i>Owner</i> for <i>Work</i> or services required on the <i>Project</i> that has been pre-tendered or pre-negotiated by the <i>Owner</i> , and upon such assignment, the <i>Owner</i> shall have no further liability to any party for such contract. 3.6.10 The <i>Contractor</i> covenants that each subcontract or supply contract which the <i>Contractor</i> enters into for the purpose of performing the <i>Work</i> shall expressly provide for the assignment thereof to the <i>Owner</i> (at the option of the <i>Owner</i>) and the assumption by the <i>Owner</i> of the obligations of the <i>Contractor</i> thereunder, upon the termination of the <i>Contract</i> and upon written notice by the <i>Owner</i> to the other parties to such subcontracts or supply contracts, without the imposition of further terms or

		conditions; provided, however, that until the <i>Owner</i> has given such notice, nothing herein contained shall be deemed to create any contractual or other liability upon the <i>Owner</i> for the performance of obligations under such subcontracts or supply contracts and the <i>Contractor</i> shall be fully responsible for all of its obligations and liabilities (if any) under such subcontracts and supply contracts.”

SC19 GC 3.7 LABOUR AND PRODUCTS

	3.7.1	<u>Amend</u> paragraph 3.7.1 by <u>adding</u> the words, “..., agents, <i>Subcontractors</i> and <i>Suppliers</i> ...” after the word “employees” in the first line.
	3.7.2	<u>Delete</u> paragraph 3.7.2 and <u>substitute</u> with the following: “3.7.2 <i>Products</i> 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 <i>Place of the Work</i> , unless otherwise specified. <i>Products</i> which are not specified shall be of a quality consistent with those specified and their use acceptable to the <i>Consultant</i> . <i>Products</i> brought on to the <i>Place of the Work</i> by the <i>Contractor</i> shall be deemed to be the property of the <i>Owner</i> , but the <i>Owner</i> shall be under no liability for loss thereof or damage thereto arising from any cause whatsoever. The said <i>Products</i> shall be at the sole risk of the <i>Contractor</i> . Workmanship shall be, in every respect, first class and the <i>Work</i> shall be performed in accordance with the best modern industry practice.”
	3.7.4 to 3.7.8	<u>Add</u> new paragraphs 3.7.4, 3.7.5, 3.7.6, 3.7.7, and 3.7.8 as follows: “3.7.4 Upon receipt of a <i>Notice in Writing</i> from the <i>Owner</i> , the <i>Contractor</i> shall immediately remove from the <i>Place of the Work</i> , tradesmen and labourers or anyone whose conduct jeopardizes the safety of the <i>Owner</i> ’s operations or who are considered by the <i>Owner</i> or the <i>Consultant</i> to be unskilled or otherwise objectionable. Immediately upon receipt of the request, the <i>Contractor</i> shall make arrangements to appoint an acceptable replacement. 3.7.5 The <i>Contractor</i> shall cooperate with the <i>Owner</i> and its representatives and shall take all reasonable and necessary actions to maintain stable and harmonious labour relations with respect to the <i>Work</i> at the <i>Place of the Work</i> , including cooperation to attempt to avoid <i>Work</i> stoppages, trade union jurisdictional disputes and other <i>Labour Disputes</i> . Any costs arising from labour disputes shall be at the sole expense of the <i>Contractor</i> . 3.7.6 The cost for overtime required beyond the normal <i>Working Day</i> to complete individual construction operations of a continuous nature, such as pouring or finishing of concrete or similar work, or <i>Work</i> that the <i>Contractor</i> elects to perform at overtime rates without the <i>Owner</i> requesting it, shall not be chargeable to the <i>Owner</i> . 3.7.7 All manufactured <i>Products</i> which are identified by their proprietary names or by part or catalogue number in the <i>Specifications</i> shall be used by the <i>Contractor</i> . No substitutes for such specified <i>Products</i> shall be used without the written approval of the <i>Owner</i> and the <i>Consultant</i> . Substitutes will only be considered by the <i>Consultant</i> when submitted in sufficient time to permit proper review and investigation. When requesting approval for the use of substitutes, the <i>Contractor</i> shall include in its submission any proposed change in the <i>Contract Price</i> . The <i>Contractor</i> shall use all proprietary <i>Products</i> in strict accordance with the manufacturer’s directions. Where there is a choice of proprietary <i>Products</i> specified for one use, the <i>Contractor</i> may select any one of the <i>Products</i> so specified for this use.”

		3.7.8 Materials, appliances, equipment and other <i>Products</i> are sometimes specified by reference to brand names, proprietary names, trademarks or symbols. In such cases, the name of a manufacturer, distributor, <i>Supplier</i> or dealer is sometimes given to assist the <i>Contractor</i> to find a source <i>Supplier</i>. This shall not relieve the <i>Contractor</i> from its responsibility from finding its own source of supply even if the source names no longer supplies the <i>Product</i> specified. If the <i>Contractor</i> is unable to obtain the specified <i>Product</i>, the <i>Contractor</i> shall supply a substitute product equal to or better than the specified <i>Product</i>, as approved by the <i>Consultant</i> with no extra compensation. Should the <i>Contractor</i> be unable to obtain a substitute <i>Product</i> equal to or superior to the specified <i>Product</i> and the <i>Owner</i> accepts a different <i>Product</i>, the <i>Contract Price</i> shall be adjusted accordingly, as approved by the <i>Consultant</i>."

SC20 GC 3.8 SHOP DRAWINGS

	3.8.1	<u>Delete</u> paragraph 3.8.1 in its entirety and <u>replace</u> with the following: "3.8.1 The <i>Contractor</i> shall provide shop drawings as described in the <i>Contract Documents</i> and as the <i>Consultant</i> may reasonably request."
	3.8.3	<u>Delete</u> paragraph 3.8.3 and <u>replace</u> it with the following: "3.8.3 The <i>Contractor</i> shall prepare a <i>Shop Drawings</i> schedule acceptable to the <i>Owner</i> and the <i>Consultant</i> prior to the first application for payment. A draft of the proposed <i>Shop Drawings</i> schedule shall be submitted by the <i>Contractor</i> to the <i>Consultant</i> and the <i>Owner</i> for approval. The draft <i>Shop Drawings</i> schedule shall clearly indicate the phasing of <i>Shop Drawings</i> submissions. The <i>Contractor</i> shall periodically re-submit the <i>Shop Drawings</i> schedule to correspond to changes in the <i>Construction Schedule</i>."
	3.8.5	<u>Delete</u> paragraph 3.8.5 in its entirety and <u>substitute</u> the following: "3.8.5 At the time of providing <i>Shop Drawings</i>, the <i>Contractor</i> shall advise the <i>Consultant</i> in writing of any deviations in <i>Shop Drawings</i> from the requirements of the <i>Contract Documents</i>. The <i>Consultant</i> shall indicate the acceptance of such deviation expressly in writing. Where manufacturers' literature is submitted in lieu of scaled drawings, it shall be clearly marked in ink, to indicate the specific items for which review is requested."
	3.8.8 to 3.8.12	<u>Add</u> new paragraphs 3.8.8, 3.8.9, 3.8.10, 3.8.11, and 3.8.12 as follows: "3.8.8 Reviewed <i>Shop Drawings</i> shall not authorize a change in the <i>Contract Price</i> and/or the <i>Contract Time</i>. 3.8.9 Except where the parties have agreed to a different <i>Shop Drawings</i> schedule pursuant to paragraph 3.10.3, the <i>Contractor</i> shall comply with the requirements for <i>Shop Drawings</i> submissions stated in the <i>Specifications</i>. 3.8.10 The <i>Contractor</i> shall not use the term "by others" on <i>Shop Drawings</i> or other submittals. The related trade, <i>Subcontractor</i> or <i>Supplier</i> shall be stated. 3.8.11 Certain <i>Specifications</i> sections require the <i>Shop Drawings</i> to bear the seal and signature of a professional engineer. Such professional engineer must be registered in the jurisdiction of the <i>Place of the Work</i> and shall have expertise in the area of practice reflected in the <i>Shop Drawings</i>.

		3.8.12 The <i>Consultant</i> will review and return <i>Shop Drawings</i> and submittals in accordance with the schedule agreed upon in paragraph 3.10.3, The <i>Contractor</i> shall allow the <i>Consultant</i> a minimum of 10 <i>Working Days</i> to review <i>Shop Drawings</i> from the date of receipt. If resubmission of <i>Shop Drawings</i> is required, a further 10 <i>Working Day</i> period is required for the <i>Consultant's</i> review."

SC22 *NEW* GC 3.9 USE OF THE WORK

	GC 3.9	<u>Add</u> new GC 3.9 – USE OF THE WORK as follows: "GC 3.9 USE OF THE WORK 3.9.1 The <i>Contractor</i> shall confine <i>Construction Equipment</i>, <i>Temporary Work</i>, storage of <i>Products</i>, waste products and debris, and operations of employees and <i>Subcontractors</i> to limits indicated by laws, ordinances, permits, by the direction of the <i>Owner</i> or the <i>Consultant</i>, or the <i>Contract Documents</i> and shall not unreasonably encumber the <i>Place of the Work</i>. 3.9.2 The <i>Contractor</i> shall not load or permit to be loaded any part of the <i>Work</i> with a weight or force that will endanger the safety of the <i>Work</i>. 3.9.3 The <i>Owner</i> shall have the right to enter or occupy the <i>Place of the Work</i> in whole or in part for the purpose of placing fittings and equipment, or for other use before <i>Substantial Performance of the Work</i>, if, in the opinion of the <i>Consultant</i>, such entry and occupation does not prevent or substantially interfere with the <i>Contractor</i> in the performance of the <i>Contract</i> within the <i>Contract Time</i>. Such entry or occupation shall neither be considered as acceptance of the <i>Work</i> or in any way relieves the <i>Contractor</i> from its responsibility to complete the <i>Contract</i>."

SC23 *NEW* GC 3.10 CUTTING AND REMEDIAL WORK

	GC 3.10	<u>Add</u> new GC 3.10 – CUTTING AND REMEDIAL WORK as follows: "GC 3.10 CUTTING AND REMEDIAL WORK 3.10.1 The <i>Contractor</i> shall perform the cutting and remedial work required to make the affected parts of the <i>Work</i> come together properly. Such cutting and remedial work shall be performed by specialists familiar with the <i>Products</i> affected and shall be performed in a manner to neither damage nor endanger the <i>Work</i>. 3.10.2 The <i>Contractor</i> shall coordinate the <i>Work</i> to ensure all cutting and remedial work required is kept to a minimum. 3.10.3 Unless specifically stated otherwise in the <i>Specifications</i>, the <i>Contractor</i> shall do all cutting and making good necessary for the proper installation and performance of the <i>Work</i>. 3.10.4 To avoid unnecessary cutting, the <i>Contractor</i> shall lay out its work and advise the <i>Subcontractors</i>, when necessary, where to leave holes for installation of pipes and other work."

SC24 *NEW* GC 3.11 CLEAN UP

3.11.1, 3.11.2, 3.11.3, 3.11.4, 3.11.5 & 3.11.6	Add new paragraphs 3.11.1, 3.11.2, 3.11.3, 3.11.4, 3.11.5, and 3.11.6 as follows: 3.11.1 The <i>Contractor</i> shall maintain the <i>Work</i> in a safe and tidy condition and free from the accumulation of waste products and debris, other than that caused by the <i>Owner</i>, other contractors or their employees. The <i>Contractor</i> shall remove accumulated waste and debris at least once a week as a minimum or as required by the nature of the <i>Work</i>. 3.11.2 Before applying for <i>Substantial Performance of the Work</i>, the <i>Contractor</i> shall remove waste products and debris, other than that resulting from the work of the <i>Owner</i>, other contractors or their employees, and shall leave the <i>Place of the Work</i> clean and suitable for use or occupancy by the <i>Owner</i>. The <i>Contractor</i> shall remove products, tools, materials, <i>Construction Equipment</i>, and <i>Temporary Work</i> not required for the performance of the remaining work. 3.11.3 As a condition precedent to submitting its application for final payment, the <i>Contractor</i> shall remove any remaining products, tools, materials, <i>Construction Equipment</i>, <i>Temporary Work</i>, and waste products and debris, other than those resulting from the work of the <i>Owner</i>, other contractors or their employees. 3.11.4 The <i>Contractor</i> shall clean up garbage during and after construction and maintain the <i>Place of the Work</i> in a neat and orderly condition on a daily basis. Prior to leaving the <i>Place of the Work</i> and following completion of the <i>Work</i>, the <i>Contractor</i> shall make good all damage to the building and its components caused by the performance of the <i>Work</i> or by any <i>Subcontractor</i> or <i>Supplier</i>. The <i>Contractor</i> shall leave the <i>Place of the Work</i> in a clean and finished state; remove all <i>Construction Equipment</i> and materials; remove all paint, stains, labels, dirt, etc. from the <i>Place of the Work</i>; and touch up all damaged painted areas (if applicable). The <i>Contractor</i> shall be responsible for restoring those areas of the <i>Place of the Work</i>, impacted by the <i>Work</i>, to their original condition." 3.11.5 Without limitation to or waiver of the <i>Owner's</i> other rights and remedies, the <i>Owner</i> shall have the right to back charge to the <i>Contractor</i> the cost of damage to the site caused by transportation in and out of the <i>Place of the Work</i> by the <i>Contractor</i>, <i>Subcontractors</i> or <i>Suppliers</i>, if not repaired before final payment. 3.11.6 The <i>Contractor</i> shall dispose of debris at a location and in a manner acceptable to the <i>Owner</i> (and to the authorities having jurisdiction at the <i>Place of the Work</i> and at the disposal area) and the <i>Contractor</i> shall cover containers with tarpaulins."

SC25 *NEW* GC 3.12 EXCESS SOIL MANAGEMENT

GC 3.12	<u>Add</u> new GC 3.12 – EXCESS SOIL MANAGEMENT as follows: "GC 3.12 EXCESS SOIL MANAGEMENT 3.12.1 The <i>Contractor</i> shall be solely responsible for the proper management of all <i>Excess Soil</i> at the <i>Place of the Work</i> and for performance of the <i>Work</i> in compliance with the rules, regulations and practices required by the <i>Excess Soil Regulation</i> until such time as <i>Ready-for-Takeover</i> is achieved. Without restricting the generality of the previous sentence, the <i>Contractor's</i> responsibility under this GC 3.12 includes the designation, transportation, tracking, temporary and/or final placement, record keeping, and reporting of all <i>Excess Soil</i> in connection with the <i>Work</i> all in

		compliance with the <i>Excess Soil Regulation</i> .
	3.12.3	The <i>Contractor</i> shall indemnify and save harmless the <i>Owner</i> , their agents, officers, directors, administrators, employees, consultants, successors and assigns from and against the consequences of any and all health and safety infractions committed directly by the <i>Contractor</i> , or those for whom it is responsible at law, under the <i>Excess Soil Regulation</i> , or any environmental protection legislation, including the payment of legal fees and disbursements on a substantial indemnity basis. Such indemnity shall apply to the extent to which the <i>Owner</i> is not covered by insurance."

SC26 *NEW* GC 3.13 CONTRACTOR STANDARD OF CARE

	3.13	<u>Add</u> a new GC 3.13 – CONTRACTOR STANDARD OF CARE as follows: "GC 3.13 CONTRACTOR STANDARD OF CARE "3.13.1 In performing its services and obligations under the <i>Contract</i>, the <i>Contractor</i> 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 <i>Contractor</i> acknowledges and agrees that throughout the <i>Contract</i>, the performance of the <i>Contractor's</i> obligations, duties and responsibilities shall be interpreted in accordance with this standard. The <i>Contractor</i> shall exercise the same standard of care, skill and diligence in respect of any <i>Products</i>, personnel or procedures which it may recommend to the <i>Owner</i> or employ on the <i>Project</i>. 3.13.2 The <i>Contractor</i> further represents, covenants and warrants to the <i>Owner</i> that: .1 the personnel it assigns to the <i>Project</i> are appropriately experienced; .2 it has a sufficient staff of qualified and competent personnel to replace any of its appointed representatives, subject to the <i>Owner's</i> 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 <i>Contractor</i> to perform its work under the <i>Contract</i>."

PART 4 ALLOWANCES

SC26 GC 4.1 CASH ALLOWANCES

	4.1.3	In GC 4.1.3 <u>delete</u> the words "through the <i>Consultant</i> " and <u>replace</u> them with "in writing."
	4.1.4	<u>Delete</u> GC 4.1.4 in its entirety and <u>replace</u> it with the following: "4.1.4 Where the actual cost of the <i>Work</i> under any cash allowance exceeds the amount of the allowance, any unexpended amounts from other cash allowances shall be reallocated, by the <i>Consultant</i> at the <i>Owner's</i> direction, to cover the shortfall, and, in that case, there shall be no additional amount added to the <i>Contract Price</i> for overhead and profit. Only where the actual cost of the <i>Work</i> under all cash allowances exceeds the total amount of all cash allowances shall the <i>Contractor</i> be compensated for the excess incurred and substantiated, plus an amount for overhead and profit on the excess only, as set out in the <i>Contract Documents</i>."

	4.1.7	<u>Delete</u> GC 4.1.7 in its entirety and <u>replace</u> it with the following: "4.1.7 The net amount of any unexpended cash allowances, after providing for any reallocations as contemplated in paragraph 4.1.4, shall be deducted from the <i>Contract Price</i> by <i>Change Order</i> without any adjustment for the <i>Contractor's</i> overhead and profit on such amount."
	4.1.8 and 4.1.9	<u>Add</u> new GC 4.1.8 and 4.1.9 as follows: "4.1.8 The <i>Owner</i> reserves the right to call, or to have the <i>Contractor</i> call, for competitive bids for portions of the <i>Work</i> to be paid for from cash allowances. 4.1.9 Cash allowances cover the net cost to the <i>Contractor</i> of services, <i>Products</i> , <i>Construction Equipment</i> , freight, unloading, handling, storage, installation, provincial sales tax, and other authorized expenses incurred in performing any <i>Work</i> stipulated under the cash allowances but does not include any <i>Value Added Taxes</i> payable by the <i>Owner</i> and the <i>Contractor</i> ."

PART 5 PAYMENT

SC28 GC 5.1

FINANCING INFORMATION REQUIRED OF THE OWNER

	5.1	<u>Delete</u> GC 5.1 – FINANCING INFORMATION REQUIRED OF THE OWNER and all paragraphs thereunder, including any reference to GC 5.1 throughout the <i>Contract</i> .

SC29 GC 5.2

APPLICATIONS FOR PAYMENT

	5.2.1	<u>Delete</u> GC 5.2.1 and <u>replace</u> it with the following: "5.2.1 Upon execution of the <i>Contract</i> , and in any event prior to the <i>Contractor</i> submitting its first application for payment, the <i>Owner</i> shall issue a purchase order to the <i>Contractor</i> for the performance of the <i>Contract</i> . The number indicated on such purchase order must be clearly identifiable on all applications for payment. Applications for payment shall be dated the last day of each month or an alternative day of each month agreed to in writing by the parties, with each month representing one payment period under the <i>Contract</i> (each a " Payment Period "). Within 3 calendar days of the end of each <i>Payment Period</i> , the <i>Contractor</i> will submit a draft application for payment to the <i>Owner</i> and the <i>Consultant</i> . Upon receipt of the draft application for payment, and within 7 calendar days, a representative of each of the <i>Contractor</i> , <i>Owner</i> , and the <i>Consultant</i> shall attend a meeting to discuss and review the work completed during the <i>Payment Period</i> , including quantities, if applicable (the " Pre-Invoice Submission Meeting "). In the event that the scheduled date for the <i>Pre-Invoice Submission Meeting</i> is not a <i>Working Day</i> , the <i>Pre-Invoice Submission Meeting</i> shall occur on the next <i>Working Day</i> . The <i>Contractor</i> shall bring with it to the <i>Pre-Invoice Submission Meeting</i> the following: .1 a copy of the draft application for payment; .2 any documents the <i>Contractor</i> is required to bring to the <i>Pre-Invoice Submission Meeting</i> as stipulated in the <i>Contract Documents</i> or as reasonably requested by the <i>Owner</i> ; and

		.3 any other documents reasonably requested, in advance, by the <i>Owner</i> or the <i>Consultant</i> ."
	5.2.2	<u>Delete</u> GC 5.2.2 in its entirety and <u>replace</u> it with the following: "5.2.2 Applications for payment shall be given in accordance with the following requirements: .1 Within 5 calendar days following the <i>Pre-Invoice Submission Meeting</i>, the <i>Contractor</i> shall deliver its application for payment to the <i>Owner</i> and to the <i>Consultant</i> for <i>Work</i> performed during the <i>Payment Period</i> ("Proper Invoice Submission Date") subject to the following: .1 if the fifth calendar day following the <i>Pre-Invoice Submission Meeting</i>, to which an invoice relates falls on a day that is not a <i>Working Day</i>, the <i>Proper Invoice Submission Date</i> shall be deemed to fall on the next <i>Working Day</i>. .2 The application for payment must be delivered to the <i>Owner</i> and to the <i>Consultant</i> in the same manner as a <i>Notice in Writing</i> during the hours of 9:00 am to 4:00pm (EST) on the <i>Proper Invoice Submission Date</i>. Delivery to the <i>Owner</i> shall be to the following email address: <u>immo-construction@ecolecatholique.ca</u> .3 If an application for payment is received after 4:00 p.m. (EST) on the applicable <i>Proper Invoice Submission Date</i>, the application for payment will not be considered or reviewed by the <i>Owner</i> and <i>Consultant</i> until the next <i>Proper Invoice Submission Date</i>. Notwithstanding the foregoing, the <i>Owner</i> in its sole and absolute discretion may elect to accept an application for payment submitted after 4:00 p.m. on the applicable <i>Proper Invoice Submission Date</i>; however, such acceptance shall not be construed as a waiver of any of its rights or waive or release the <i>Contractor</i>'s obligations to strictly comply with the requirements prescribed in this subparagraph 5.2.2.3. .4 No applications for payment shall be accepted by the <i>Owner</i> prior to the <i>Proper Invoice Submission Date</i>. .5 All applications for payment shall include all of the requirements for a <i>Proper Invoice</i> prescribed by the <i>Construction Act</i> and this <i>Contract</i> and be dated the last day of the applicable <i>Payment Period</i>;"
	5.2.3	<u>Delete</u> GC 5.2.3 and <u>replace</u> it with the following: "5.2.3 The amount claimed shall be for the value, proportionate to the amount of the <i>Contract</i>, of <i>Work</i> performed and <i>Products</i> delivered and incorporated into the <i>Work</i> as of the last date of the applicable <i>Payment Period</i>. Materials may also be deemed to be supplied to an improvement, for payment purposes, when, in the <i>Owner's</i> opinion, they are placed and properly secured on the land on which the improvement is made, or placed upon land designated by the <i>Owner</i> or agent of the <i>Owner</i>, but placing the materials on the land so designated does not, of itself, make that land subject to a lien. No amount claimed shall include products delivered and incorporated into the work, unless the products are free and clear of all security interests, liens and other claims of third parties. No amount claimed shall include <i>Products</i> delivered to the <i>Place of the Work</i> unless the <i>Products</i> are free and clear of all security interests, liens, and other claims of third parties."
	5.2.4	After the word " <i>Consultant</i> " in GC 5.2.4 <u>add</u> the words "and the <i>Owner</i> "

	5.2.5	After the word " <i>Consultant</i> " in GC 5.2.5 <u>add</u> the words "or the <i>Owner</i> ".
	5.2.6	In GC 5.2.6, <u>delete</u> the word " <i>Consultant</i> " and <u>replace</u> it with " <i>Owner</i> ".
	5.2.9	<u>Add</u> new 5.2.9 as follows: "5.2.9 The <i>Contractor</i> shall prepare and maintain current as-built drawings which shall consist of the <i>Drawings</i> and <i>Specifications</i> revised by the <i>Contractor</i> during the <i>Work</i> , showing changes to the <i>Drawings</i> and <i>Specifications</i> , which current as-built drawings shall be maintained by the <i>Contractor</i> and made available to the <i>Consultant</i> for review with each application for progress payment. The <i>Consultant</i> shall recommend to the <i>Owner</i> that the <i>Owner</i> retain a reasonable amount for the value of the as-built drawings not presented for review."

SC30 GC 5.3 PAYMENT

	5.3.1	<u>Delete</u> GC 5.3.1 in its entirety, including all subparagraphs thereunder, and <u>replace</u> it with the following: "5.3.1 After receipt by the <i>Owner</i> and the <i>Consultant</i> of an application for payment submitted by the <i>Contractor</i> in accordance with GC 5.2 - APPLICATIONS FOR PAYMENT: .1 the <i>Consultant</i> will either: (a) issue to the <i>Owner</i> with a copy to the <i>Contractor</i>, a progress payment certificate in the amount applied for by the <i>Contractor</i> in the <i>Proper Invoice</i>, or (b) issue to the <i>Owner</i>, with a copy to the <i>Contractor</i>, a certificate for payment for an amount determined by the <i>Consultant</i> to be properly due to the <i>Contractor</i> after applying any credits, withheld amounts, or other set-offs which the <i>Consultant</i> has determined that the <i>Owner</i> is entitled to notwithstanding any notice of dispute or disagreement that the <i>Contractor</i> may have served, along with the <i>Consultant's</i> reasons why an amount other than what is claimed in the <i>Proper Invoice</i> is properly due to the <i>Contractor</i>, which finding the <i>Owner</i> may accept or amend prior to the <i>Owner</i> issuing a <i>Notice of Non-Payment</i>, if any, in accordance with GC 5.3.2; .2 the <i>Owner</i> shall make payment to the <i>Contractor</i> on account as provided in Article A-5 PAYMENT, (a) in the amount stated in the certificate for payment, or (b) in the amount stated in the certificate for payment less such amount stated in the <i>Owner's Notice of Non-Payment</i> issued pursuant to GC 5.3.3, on the 28th calendar day after receipt of a <i>Proper Invoice</i>, unless such 28th calendar day lands on a day that is other than a <i>Working Day</i>, in which case payment shall be made on the next <i>Working Day</i> after such 28th day."

	5.3.2 to 5.3.7	<u>Add</u> new paragraphs 5.3.2, 5.3.3, 5.3.4, 5.3.4, 5.3.5, 5.3.6, and 5.3.7 as follows: 5.3.2 All payments to the <i>Contractor</i> shall be processed using electronic funds transfer (“EFT”) and deposited directly to the <i>Contractor’s</i> bank account unless agreed to otherwise by the <i>Contractor</i> and the <i>Owner</i> in writing. Prior to the <i>Contractor</i> submitting its first application for payment, the <i>Owner</i> and the <i>Contractor</i> shall exchange such information as is necessary to facilitate <i>EFT</i> payments. 5.3.3 In the event that the application for payment delivered by the <i>Contractor</i> pursuant to GC 5.2 - APPLICATIONS FOR PAYMENT does not include the requirements for a <i>Proper Invoice</i> or where the <i>Owner</i> disputes the amount claimed as payable in the <i>Proper Invoice</i>, then the <i>Owner</i> shall within 14 calendar days of receipt of the application for payment, issue a <i>Notice of Non-Payment</i> (Form 1.1). 5.3.4 Where the <i>Owner</i> has delivered a <i>Notice of Non-Payment</i>, the <i>Owner</i> and the <i>Contractor</i> shall first engage in good faith negotiations to resolve the dispute. If within 5 calendar days following the issuance of a <i>Notice of Non-Payment</i>, despite good faith efforts by both parties and the assistance of the <i>Consultant</i>, the <i>Owner</i> and the <i>Contractor</i> cannot resolve the dispute, either party may commence an <i>Adjudication</i> in accordance with the procedures set out in the <i>Construction Act</i>. Any portion of the <i>Proper Invoice</i> which is not the subject of the <i>Notice of Non-Payment</i> shall be payable within the time period set out in GC 5.3.1.2. 5.3.5 Provided that the <i>Owner</i> complies with its obligations under the <i>Construction Act</i>, and subject to any interim determination of an adjudicator in accordance with any <i>Adjudication</i>, and where applicable, a final determination made in accordance with the dispute resolution processes prescribed by this <i>Contract</i>, the <i>Owner</i> shall be entitled to claim in a <i>Notice of Non-Payment</i> a right to deduct from or, set off against, any payment of the <i>Contract Price</i>: .1 any amount expended by the <i>Owner</i> in exercising the <i>Owner’s</i> rights under this <i>Contract</i> to perform any of the <i>Contractor’s</i> obligations that the <i>Contractor</i> has failed to perform; .2 any damages, costs or expenses (including, without limitation, reasonable legal fees and expenses) incurred by the <i>Owner</i> as a result of the failure of the <i>Contractor</i> to perform any of its obligations under the <i>Contract</i>; .3 any other amount owing from the <i>Contractor</i> to the <i>Owner</i> under this <i>Contract</i>. 5.3.6 The amounts disputed and described under the <i>Notice of Non-Payment</i> shall be held by the <i>Owner</i> until all disputed amounts of the <i>Proper Invoice</i> have been resolved pursuant to PART 8 – DISPUTE RESOLUTION. 5.3.7 The <i>Contractor</i> represents, warrants, and covenants to the <i>Owner</i> that it is familiar with its prompt payment and trust obligations under the <i>Construction Act</i> and will take all required steps and measures to ensure that it complies with the applicable prompt payment and trust provisions under the <i>Construction Act</i> including, without limitation, section 8.1 of the <i>Construction Act</i>. Evidence of the <i>Contractor’s</i> compliance under this GC 5.3.7, including evidence demonstrating that all <i>EFTs</i> by the <i>Owner</i> to the <i>Contractor</i> are kept in a bank account in the <i>Contractor’s</i> name will be made available to the <i>Owner</i> within 5 <i>Working Days</i> following receipt by the <i>Contractor</i> of a <i>Notice in Writing</i> making such request.”

SC31

**GC 5.4 SUBSTANTIAL PERFORMANCE OF THE WORK- AND PAYMENT OF
 HOLDBACK**

	GC 5.4	<u>Delete</u> GC 5.4 – SUBSTANTIAL PERFORMANCE OF THE WORK AND PAYMENT OF HOLDBACK in its entirety and <u>replace</u> it with the following: “GC 5.4 SUBSTANTIAL PERFORMANCE OF THE WORK AND PAYMENT OF HOLDBACK 5.4.1 When the <i>Contractor</i> considers that <i>Substantial Performance of the Work</i> has been achieved, the <i>Contractor</i> shall prepare and submit to the <i>Consultant</i> and the <i>Owner</i> a comprehensive deficiency list of items to be completed or corrected, including any incomplete <i>Close-Out Documentation</i>, and apply for a review by the <i>Consultant</i> and the <i>Owner</i> to establish <i>Substantial Performance of the Work</i>. Failure to include an item on the list does not alter the responsibility of the <i>Contractor</i> to complete the <i>Contract</i>. 5.4.2 Prior to, or as part of its written application for <i>Substantial Performance of the Work</i> the <i>Contractor</i> shall submit to the <i>Consultant</i> submit to the <i>Consultant</i> all closeout documentation required by the <i>Contract Documents</i>, including but not limited to, warranties, manuals, guarantees, as-built drawings and all other relevant literature from suppliers and manufacturers including, but not limited to, where applicable (the “Close-Out Documentation”): .1 equipment, maintenance, and operations manuals; .2 equipment specifications, data sheets and brochures, parts lists and assembly drawings, performance curves and other related data; .3 line drawings, value charts and control sheets sequences with description of the sequence of operations; .4 warranty documents; .5 guarantees; .6 certificates; .7 service and maintenance reports; .8 <i>Specifications</i>; .9 <i>Shop Drawings</i>; .10 coordination drawings; .11 testing and balancing results and reports; .12 <i>Commissioning</i> and quality assurance documentation; .13 distribution system diagrams; .14 spare parts; .15 samples; .16 existing reports and correspondence from authorities having jurisdiction in the <i>Place of the Work</i>; .17 inspection certificates; .18 red-lined record drawings from the construction trailer in two copies and .19 other materials or documentation required to be submitted under the <i>Contract</i>. 5.4.3 The <i>Consultant</i> will review the <i>Work</i> to verify the validity of the application and shall promptly, and in any event, no later than 30 calendar days after receipt of the <i>Contractor’s</i> complete deficiency list and application: .1 prepare a final deficiency list incorporating all items to be completed or corrected, including any incomplete or unsubmitted <i>Close-Out Documentation</i>. Each item shall have an indicated value for correction or completion and the determination of the total value of such items shall be determined pursuant to GC 5.8 – DEFICIENCY HOLDBACK. The final deficiency list complete with values is to be included with the <i>Consultant’s</i> draft verification and shall be reviewed with the <i>Owner</i> prior to the <i>Consultant</i> rendering a determination in

		accordance with GC 5.4.3.2 .2 having completed the requirements set out in GC 5.4.3.1, (a) the <i>Consultant</i> shall advise the <i>Contractor</i> in writing that the <i>Work</i> or the designated portion of the <i>Work</i> is not substantially performed and give reasons why, or (b) the <i>Consultant</i> shall state the date of <i>Substantial Performance of the Work</i> in a certificate and issue a copy of that certificate to each the <i>Owner</i> and the <i>Contractor</i>. 5.4.4 Following the issuance of the certificate of <i>Substantial Performance of the Work</i> referenced in subparagraph 5.4.3.2(b): .1 The <i>Contractor</i> shall publish, in a construction trade newspaper in the area of the location of the <i>Work</i>, a copy of the certificate of <i>Substantial Performance of the Work</i> referred to in GC 5.4.2.2(b) within seven (7) calendar days of receiving a copy of the certificate signed by the <i>Consultant</i>, and the <i>Contractor</i> shall provide suitable evidence of the publication to the <i>Consultant</i> and the <i>Owner</i>. If the <i>Contractor</i> fails to publish such notice, the <i>Owner</i> shall be at liberty to publish said certificate and back-charge the <i>Contractor</i> its reasonable costs for doing so; .2 The <i>Contractor</i> shall complete the <i>Work</i> within forty (40) calendar days of the date certified as the date of <i>Substantial Performance of the Work</i>; .3 Notwithstanding any other provisions of the <i>Contract</i>, no payments will be processed between <i>Substantial Performance of the Work</i> and <i>Ready-for-Takeover</i>; .4 The <i>Owner</i> reserves the right to contract out any or all unfinished <i>Work</i> if it has not been completed within forty (40) days of <i>Substantial Performance of the Work</i> using, without limitation, the funds retained in accordance with GC 5.8 - DEFICIENCY HOLDBACK, without prejudice to any other right or remedy and without affecting the warranty period. The cost to the <i>Owner</i> of completing the <i>Work</i> including <i>Owner</i> and <i>Consultant</i> wages and materials shall be deducted from the <i>Contract Price</i>. 5.4.5 After publication of the certificate of the <i>Substantial Performance of the Work</i>, and provided that the <i>Contractor</i> has completed performance of the <i>Work</i> within the 40 calendar days following certification of <i>Substantial Performance of the Work</i>, the <i>Contractor</i> may submit an application for payment of the outstanding <i>Construction Act</i> holdback amount, which application for payment shall: .1 include all of the requirements listed in EXHIBIT "1" - PROJECT SPECIFIC REQUIREMENTS FOR A PROPER INVOICE, as applicable to the application for payment of the holdback amount; and .2 include a statement that the <i>Contractor</i> has not received any written notices of lien or any claims for liens from any <i>Subcontractor</i> or <i>Supplier</i>. 5.4.6 The <i>Construction Act</i> holdback amount shall become due and payable the day immediately following the expiration of the holdback period prescribed by the <i>Construction Act</i> (in most cases being the 61st calendar day following the publication of the certificate of <i>Substantial Performance of the Work</i> referred to in GC 5.4.4.1), subject to the occurrence of any of the following:

		.1 the preservation of a lien in respect of the <i>Project</i> that has not been satisfied, discharged or otherwise provided for in accordance with the <i>Construction Act</i>; .2 receipt by the <i>Owner</i> of a written notice of lien that has not been satisfied, discharged or otherwise provided for in accordance with the <i>Construction Act</i>; or .3 prior to the expiry of 40 calendar days following the publication of the certificate of <i>Substantial Performance of the Work</i>, the <i>Owner</i> publishes a <i>Notice of Non-Payment</i> of holdback in accordance with the <i>Construction Act</i> (Form 6), setting out the amount of holdback that will not be paid, which may include non-payment to secure the correction of deficiencies and/or the completion of the <i>Work</i>. 5.4.7 Notwithstanding the <i>Owner's</i> obligation to make payment of the holdback amount in accordance with GC 5.4.6, the processing of such payment remains subject to the <i>Owner's</i> internal <i>EFT</i> timing limitations. The <i>Owner</i> covenants, and the <i>Contractor</i> agrees, that payment of the holdback shall be made by <i>EFT</i> at the first opportunity during the <i>Owner's</i> normal processing of <i>EFTs</i> upon the holdback becoming due in accordance with GC 5.4.6..

SC33 GC 5.5 FINAL PAYMENT

	GC 5.5	<u>Delete</u> GC 5.5 in its entirety, including all subparagraphs thereunder and <u>replace</u> it with the following: "5.5.1 When <i>Ready-for-Takeover</i> has been achieved in accordance with GC 12.1 – READY-FOR-TAKEOVER and the <i>Contractor</i> considers the <i>Work</i> is complete, and after the <i>Contractor</i>, the <i>Owner</i>, and the <i>Consultant</i> have attended a <i>Pre-Invoice Submission Meeting</i> analogous to the requirement in GC 5.2.1 (the "<i>Final Pre-Invoice Submission Meeting</i>"), the <i>Contractor</i> may submit an application for final payment to the <i>Owner</i> and to the <i>Consultant</i>, which application for payment shall: .1 include all of the requirements set out in GC 5.2.2, including without limitation those requirements listed in APPENDIX "1" - PROJECT SPECIFIC REQUIREMENTS FOR A PROPER INVOICE that are specific to an application for final payment; and .2 if applicable, (a) a certificate from the <i>Consultant</i> or written confirmation from the <i>Owner</i> that the deficiencies or incomplete <i>Work</i> waived by the <i>Owner</i> pursuant to GC 12.1.2 have been fully rectified as of the date of the <i>Contractor's</i> application for final payment, and/or (b) written confirmation, signed by the <i>Owner</i> and the <i>Contractor</i>, that the <i>Contract Price</i> has been reduced by a specified amount in exchange for the <i>Owner</i> releasing the <i>Contractor</i> of its obligation to rectify the certain outstanding deficiencies and/or incomplete <i>Work</i> waived by the <i>Owner</i> pursuant to GC 12.1.2, as detailed in such written confirmation. 5.5.2 No later than 5 calendar days prior to the <i>Final Pre-Invoice Submission Meeting</i>, the <i>Contractor</i> will, if not already provided, submit to the <i>Consultant</i> all <i>Close-Out Documentation</i>. 5.5.3 Delivery of all <i>Close-Out Documentation</i> is a requirement for the <i>Proper Invoice</i> for final payment.

		5.5.4 After receipt by the <i>Owner</i> and the <i>Consultant</i> of an application for payment submitted by the <i>Contractor</i> that is a <i>Proper Invoice</i> and by no later than 10 calendar days after the receipt of the <i>Proper Invoice</i>: .1 the <i>Consultant</i> will either: (a) issue to the <i>Owner</i> with a copy to the <i>Contractor</i>, a progress payment certificate in the amount applied for by the <i>Contractor</i> in the <i>Proper Invoice</i>, or (b) deliver a finding to the <i>Owner</i> with reasons why an amount other than what is claimed in the <i>Proper Invoice</i> is properly due to the <i>Contractor</i>, which finding the <i>Owner</i> may accept or amend prior to issuing a <i>Notice of Non-Payment</i> (Form 1.1), if any, in accordance with GC 5.5.2; .2 the <i>Owner</i> shall make payment to the <i>Contractor</i> on account as provided in Article A-5 PAYMENT, (a) in the amount stated in the certificate for payment, or (b) in the amount stated in the certificate for payment less such amount stated in the <i>Owner's Notice of Non-Payment</i> issued pursuant to GC 5.5.5, on the 28th calendar day after receipt of a <i>Proper Invoice</i>, unless such 28th calendar day lands on a day that is other than a <i>Working Day</i>, in which case payment shall be made on the next <i>Working Day</i> after such 28th day. 5.5.5 In the event that the application for final payment delivered by the <i>Contractor</i> does not include the requirements of GC 5.5.1 (including the requirements for a <i>Proper Invoice</i>) and GC 5.5.2 or where the <i>Owner</i> disputes the amount claimed as payable in the <i>Proper Invoice</i>, then the <i>Owner</i> shall within 14 calendar days of receipt of the application for payment, issue a <i>Notice of Non-Payment</i>. Where the <i>Owner</i> has delivered a <i>Notice of Non-Payment</i>, as specified under this GC 5.5.5, the <i>Owner</i> and the <i>Contractor</i> shall first engage in good faith negotiations to resolve the dispute. If within 5 calendar days following the issuance of a <i>Notice of Non-Payment</i>, despite good faith efforts by both parties with the assistance of the <i>Consultant</i>, the <i>Owner</i> and the <i>Contractor</i> cannot resolve the dispute, either party may commence an <i>Adjudication</i> in accordance with the procedures set out in the <i>Construction Act</i>. Any portion of the <i>Proper Invoice</i> which is not the subject of the <i>Notice of Non-Payment</i> shall be payable within the time period set out in GC 5.5.4.2. 5.5.6 Subject to the provisions of the <i>Construction Act</i> and any other rights conferred on the <i>Owner</i> at law or under this <i>Contract</i> to withhold payment or backcharge or set-off against payment, the <i>Owner</i> shall pay the amount payable under a <i>Proper Invoice</i> for final payment in accordance with the <i>Construction Act</i>. 5.5.7 When the <i>Consultant</i> issues certificate of completion in accordance with GC 5.5.4.1, the <i>Consultant</i> shall also issue a certificate for release of any holdback for finishing work amount. In accordance with the <i>Construction Act</i>, the <i>Owner</i> may retain any amounts which are required by law to satisfy any liens against the <i>Work</i>, in respect of any third party claims made to the <i>Owner</i> in respect of the <i>Contract</i> or the <i>Work</i>, and in respect of any claims the <i>Owner</i> may have against the <i>Contractor</i>. Subject to the foregoing, the <i>Owner</i> shall release the holdback in accordance with the <i>Construction Act</i>."

SC36 GC 5.6 DEFERRED WORK

	5.6.1	<u>Delete</u> paragraph 5.6.1 and <u>replace</u> with the following: “5.6.1 If because of conditions reasonably beyond the control of the <i>Contractor</i>, there are items of work that cannot be performed, payment in full for that portion of the <i>Work</i> which has been performed as certified by the <i>Consultant</i> shall not be withheld or delayed by the <i>Owner</i> on account thereof, but the <i>Owner</i> may withhold, subject to its requirement to issue a <i>Notice of Non-Payment</i> under the <i>Construction Act</i>, until the remaining portion of the <i>Work</i> is finished, only such an amount that the <i>Consultant</i> determines is sufficient and reasonable to cover the cost of performing such remaining work. The remaining work shall be valued as deficient work as defined in GC 5.8.1.”

SC34 *NEW* GC 5.8 DEFICIENCY HOLDBACK

	5.8.1	<u>Add</u> new GC 5.8 – DEFICIENCY HOLDBACK as follows: “GC 5.8 DEFICIENCY HOLDBACK 5.8.1 Notwithstanding any provisions contained in the <i>Contract Documents</i> concerning certification and release of monies to the <i>Contractor</i>, the <i>Owner</i> reserves the right to establish a deficiency holdback, at the time of the review for <i>Substantial Performance of the Work</i>, based on a 200% dollar value of the deficiencies listed by the <i>Consultant</i>. 5.8.2 In performing the calculation under GC 5.8.1, .1 no individual deficiency will be valued at less than five hundred dollars (\$500.00); and .2 for any <i>Close-Out Documentation</i> not submitted in advance of or as part of the <i>Contractor's</i> application for <i>Substantial Performance of the Work</i>, an amount shall be retained by the <i>Owner</i> as part of the deficiency holdback that is equal to the estimated time and material costs to retain a third-party to re-create the applicable <i>Close-Out Documentation</i>, as determined by the <i>Consultant</i>, until such time as the applicable <i>Close-Out Documentation</i> is submitted and approved. 5.8.3 The deficiency holdback shall be due and payable to the <i>Contractor</i> on the 61st day following completion of all of the deficiencies listed by the <i>Consultant</i>, there being no claims for lien registered against the title to the <i>Place of the Work</i> issued in accordance with the <i>Construction Act</i>, and less any amounts disputed under an <i>Owner's Notice of Non-Payment</i> (Form 1.1).”

PART 6 CHANGES IN THE WORK

SC35 GC 6.1 OWNER'S RIGHT TO MAKE CHANGES

	6.1.2	<u>Add</u> the following to the end of GC 6.1.2: “This requirement is of the essence and it is the express intention of the parties that any claims by the <i>Contractor</i> for a change in the <i>Contract Price</i> and/or <i>Contract Time</i> shall be barred unless there has been strict compliance with PART 6 - CHANGES IN THE WORK. No verbal dealings between the parties and no implied acceptance of alterations or additions to

		the <i>Work</i> and no claims that the <i>Owner</i> has been unjustly enriched by any alteration or addition to the <i>Work</i> , whether in fact there is any such unjust enrichment or not, shall be the basis of a claim for additional payment under this <i>Contract</i> , an increase to the <i>Contract Price</i> , or a claim for any extension of the <i>Contract Time</i> .”
6.1.3 to 6.1.8		<u>Add</u> new paragraphs 6.1.3, 6.1.4, 6.1.5, 6.1.6, 6.1.7 and 6.1.8 as follows: “6.1.3 The <i>Contractor</i> agrees that changes resulting from construction coordination, including but not limited to, site surface conditions, site coordination, and <i>Subcontractor and Supplier</i> coordination are included in the <i>Contract Price</i> and the <i>Contractor</i> shall be precluded from making any claim for a change in the <i>Contract Price</i> as a result of such changes. 6.1.4 Labour costs shall be actual, prevailing rates at the <i>Place of the Work</i> paid to workers, plus statutory charges on labour including WSIB, unemployment insurance, Canada pension, vacation pay, hospitalization and medical insurance. The <i>Contractor</i> shall provide these rates, when requested by the <i>Consultant</i>, for review and/or agreement. 6.1.5 Quotations for changes to the <i>Work</i> shall only include <i>Direct Costs</i> and be accompanied by itemized breakdowns together with detailed, substantiating quotations or cost vouchers from <i>Subcontractors</i> and <i>Suppliers</i>, submitted in a format acceptable to the <i>Consultant</i> and shall include any <i>Direct Costs</i> associated with extensions in <i>Contract Time</i>. 6.1.6 When both additions and deletions covering related <i>Work</i> or substitutions are involved in a change to the <i>Work</i>, payment, including <i>Overhead</i> and profit, shall be calculated on the basis of the net difference, if any, with respect to that change in the <i>Work</i>. 6.1.7 No extension to the <i>Contract Time</i> shall be granted for changes in the <i>Work</i> unless the <i>Contractor</i> can clearly demonstrate that such changes significantly alter the overall construction schedule submitted at the commencement of the <i>Work</i>. Extensions of <i>Contract Time</i> and all associated costs, if approved, shall be included in the relevant <i>Change Order</i>. 6.1.8 When a change in the <i>Work</i> is proposed or required, the <i>Contractor</i> shall within 10 calendar days submit to the <i>Consultant</i> for review a claim for a change in <i>Contract Price</i> and/or <i>Contract Time</i>. Should 10 calendar days be insufficient to prepare the submission, the <i>Contractor</i> shall within 5 calendar days, advise the <i>Consultant</i> in writing of the proposed date of submission of the claim. Claims submitted after the dates prescribed herein will not be considered.”

SC38 GC 6.2 CHANGE ORDER

6.2.1		In paragraph 6.2.1 after the last sentence in the paragraph <u>add</u> the following: “The adjustment in the <i>Contract Time</i> and the <i>Contract Price</i> shall include an adjustment, if any, for delay or for the impact that the change in the <i>Work</i> has on the <i>Work</i> of the <i>Contractor</i>, and once such adjustment is made, the <i>Contractor</i> shall be precluded from making any further claims for delay or impact with respect to the change in the <i>Work</i>.”
6.2.3 to 6.2.6		<u>Add</u> new paragraphs 6.2.3, 6.2.4, 6.2.5 and 6.2.6 as follows: “6.2.3 The value of a change shall be determined in one or more of the following methods as directed by the <i>Consultant</i>:

		.1 by estimate and acceptance of a lump sum; .2 by negotiated unit prices which include the <i>Contractor's</i> overhead and profit, or; .3 by the actual <i>Direct Cost</i> to the <i>Owner</i>, 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 <i>Change Orders</i> with a value of \$0 to \$25,000: (a) a maximum charge of 15% covering Overhead and profit for work done by the Contractor's own forces or; (b) a maximum charge of 10% covering Overhead and profit for work done by Subcontractors. Subcontractors shall be permitted a maximum percentage of 15% covering Overhead and profit for work done by Subcontractor's own forces, or; (c) and a maximum charge of 10% covering overhead and profit for the work done by the sub-Subcontractors. Subcontractors shall be permitted a maximum percentage of 10% covering overhead and profit for work done by sub-Subcontractors. Sub-Subcontractors shall be permitted a maximum percentage of 15% covering overhead and profit for work done by sub-Subcontractor's own forces. .2 for <i>Change Orders</i> in excess of \$25,000: the portion in excess of \$25,000 the Overhead and profit shall be half the rates stated above. 6.2.4 If a change in the Work results in a net decrease in the Contract Price, the amount of the credit shall be the net cost, without deduction for Overhead or profit. 6.2.5 All quotations shall include <i>Direct Costs</i> and 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 <i>Subcontractor</i> quotations submitted listing items 1 to 4 above and item 6 below. .6 mark-up. 6.2.6 The <i>Owner</i> and the <i>Consultant</i> will not be responsible for delays to the <i>Work</i> resulting from late, incomplete or inadequately broken-down valuations submitted by the <i>Contractor</i>."

SC39 GC 6.3 CHANGE DIRECTIVE

	6.3.6.1	<u>Amend</u> paragraph 6.3.6.1 by deleting the final period and adding the following: "1 for Change Orders with a value of \$0 to \$25,000 the total Subcontractor/Supplier mark up including Overhead and profit shall be as stated in paragraph 6.2.3.3.1. .2 For Change Orders in excess of \$25,000, the portion in excess of \$25,000 the Overhead and profit shall be half the rates stated above.

		Unless a <i>Subcontractor's</i> or <i>Supplier's</i> price has been approved by the <i>Owner</i> , the <i>Subcontractor</i> or <i>Supplier</i> shall be entitled to its actual net cost as determined in accordance with paragraph 6.3.7."
	6.3.6.2	<u>Delete</u> paragraph 6.3.6.2 and <u>replace</u> it with the following: ".2 If a change in the <i>Work</i> results in a net decrease in the <i>Contract Price</i> , the amount of the credit shall be the net cost, without deduction for <i>Overhead</i> or profit."
	6.3.7.1(4)	<u>Delete</u> GC 6.3.7.1(4).
	6.3.7.7	Amend GC 6.3.7.7 by <u>deleting</u> the words "described in paragraph 6.3.7.1" and <u>replacing</u> them with "approved by the <i>Owner</i> in writing and in advance of any such expenses being incurred;"
	6.3.7.9	Amend GC 6.3.7.9 by <u>adding</u> the following to the end of the paragraph: "...when specifically requested by the <i>Owner</i> or as directed by the <i>Consultant</i> ;"
	6.3.7.10	Amend GC 6.3.7.10 by <u>adding</u> the following to the end of the paragraph: ", provided that such amounts are not caused by negligent acts, omissions, or default of the <i>Contractor</i> or <i>Subcontractor</i> ;"
	6.3.7.13	<u>Delete</u> GC 6.3.7.13.
	6.3.7.15	<u>Delete</u> GC 6.3.7.15.
	6.3.7.17	<u>Delete</u> GC 6.3.7.17 in its entirety including all subparagraphs.
	6.3.11	<u>Delete</u> GC 6.3.11 and <u>replace</u> it with the following: "6.3.11 The value of the <i>Work</i> performed as a result of a <i>Change Directive</i> shall not be eligible to be included in progress payments until the amount, including the method for determining the amount, of such <i>Change Directive</i> has been determined."

SC40 GC 6.4 CONCEALED OR UNKNOWN CONDITIONS

	6.4.1	<u>Delete</u> paragraph 6.4.1 in its entirety and <u>replace</u> with the following: "6.4.1.1 Prior to the submission of the bid on which the Contract was awarded, the Contractor confirms that it carefully investigated the Place of the Work insofar as the Place of Work was available for investigation and, in doing so, applied to that investigation the degree of care and skill required by paragraph 3.14.1 6.4.1.2 No claim by the <i>Contractor</i> will be considered by the <i>Owner</i> or the <i>Consultant</i> in connection with conditions which could reasonably have been ascertained by such investigation or other due diligence undertaken prior to the execution of the <i>Contract</i> ."
	6.4.2	<u>Amend</u> paragraph 6.4.2 by <u>adding</u> a new first sentence as follows: "Having regard to paragraph 6.4.1, if the <i>Contractor</i> believes that the conditions of the <i>Place of the Work</i> differ materially from those reasonably anticipated, differ materially from those indicated in the <i>Contract Documents</i> or were concealed from discovery notwithstanding the conduct of the investigation described in paragraph 6.4.1, it shall provide the <i>Owner</i> and the <i>Consultant</i> with <i>Notice in Writing</i> no later than five (5) <i>Working Days</i> after the first observation of such conditions."

		-and- <u>amend</u> the existing second sentence of paragraph 6.4.2 in the second line, following the word “materially” by <u>adding</u> the words “or were concealed from discovery notwithstanding the conduct of the investigation described in paragraph 6.4.1.”.
	6.4.3	<u>Delete</u> paragraph 6.4.3 in its entirety and <u>substitute</u> the following: “6.4.3 If the <i>Consultant</i> makes a finding pursuant to paragraph 6.4.2 that no change in the <i>Contract Price</i> or the <i>Contract Time</i> is justified, the <i>Consultant</i> shall report in writing the reasons for this finding to the <i>Owner</i> and the <i>Contractor</i> .”
	6.4.5	<u>Add</u> new paragraph 6.4.5 as follows: “6.4.5 No claims for additional compensation or for an extension of <i>Contract Time</i> shall be allowed if the <i>Contractor</i> fails to give <i>Notice in Writing</i> to the <i>Owner</i> or <i>Consultant</i> , as required by paragraph 6.4.2.”

SC41 GC 6.5 DELAYS

	6.5.1	In paragraph 6.5.1 <u>delete</u> the words after the word “for” in the fourth line and <u>replace</u> them with the words “...reasonable <i>Direct Costs</i> directly flowing from the delay, but excluding any consequential, indirect or special damages (including, without limitation, loss of profits, loss of opportunity or loss of productivity).”
	6.5.2	<u>Delete</u> GC 6.5.2 in its entirety and <u>replace</u> it with the following: “6.5.2 If the <i>Contractor</i> is delayed in the performance of the <i>Work</i> by a stop work order issued by a court or other public authority and providing that such order was issued on account of a direct breach, violation, contravention, or a failure to abide by any laws, ordinances, rules, regulations, or codes by the <i>Owner</i> , <i>Other Contractor(s)</i> , or the <i>Consultant</i> , and relating to the <i>Work</i> or the <i>Place of the Work</i> , then the <i>Contract Time</i> shall be extended for such reasonable time as the <i>Consultant</i> may determine. The <i>Contractor</i> shall be reimbursed by the <i>Owner</i> for reasonable <i>Direct Costs</i> directly flowing from the delay, but excluding any consequential, indirect or special damages (including, without limitation, loss of profits, loss of opportunity or loss of productivity).”
	6.5.3	<u>Delete</u> paragraph 6.5.3 in its entirety and <u>replace</u> with the following: “6.5.3 If either party is delayed in the performance of their obligations under this <i>Contract</i> by <i>Force Majeure</i> , then the <i>Contract Time</i> shall be extended for such reasonable time as the <i>Owner</i> and the <i>Contractor</i> shall agree. The extension of time shall not be less than the time lost as a result of the event causing the delay, unless the parties agree to a shorter extension. Neither party shall be entitled to payment for costs incurred by such delays. Upon reaching agreement on the extension of the <i>Contract Time</i> attributable to the <i>Force Majeure</i> event, the <i>Owner</i> and the <i>Contractor</i> shall execute a <i>Change Order</i> indicating the length of the extension to the <i>Contract Time</i> and confirming that there are no costs payable by the either party for the extension of <i>Contract Time</i> . However, if at the time an event of <i>Force Majeure</i> arises a party is in default of its obligations under the <i>Contract</i> and has received a notice of default pursuant to PART 7 – DEFAULT NOTICE, this paragraph 6.5.3 shall not excuse a party from its obligation to cure the default(s). For greater certainty, the defaulting

		party, to the extent possible, must continue to address and cure the default notwithstanding an event of <i>Force Majeure</i> ."
	6.5.4	<u>Delete</u> paragraph 6.5.4 in its entirety and <u>replace</u> it with the following: "6.5.4 No extension or compensation shall be made for delay or impact on the <i>Work</i> unless notice in writing of a claim is given to the <i>Consultant</i> not later than ten (10) <i>Working Days</i> after the commencement of the delays or impact on the <i>Work</i> , provided however, that, in the case of a continuing cause of delay or impact on the <i>Work</i> , only one notice of claim shall be necessary."
	6.5.6 to 6.5.8	<u>Add</u> new paragraphs 6.5.6, 6.5.7 and 6.5.8 as follows: "6.5.6 If the <i>Contractor</i> is delayed in the performance of the <i>Work</i> by an act or omission of the <i>Contractor</i> or anyone directly or indirectly employed or engaged by the <i>Contractor</i> , or by any cause within the <i>Contractor's</i> control, then (i) firstly, at its expense, and to the extent possible, the <i>Contractor</i> shall accelerate the work and/or provide overtime work to recover time lost by a delay arising under this paragraph 6.5.6, and (ii) secondly, where it is not possible for the <i>Contractor</i> to recover the time lost by implementing acceleration measures and/or overtime work, the <i>Contract Time</i> may be extended for such reasonable time as the <i>Owner</i> may decide in consultation with the <i>Consultant</i> and the <i>Contractor</i> . The <i>Owner</i> shall be reimbursed by the <i>Contractor</i> for all reasonable costs incurred by the <i>Owner</i> as the result of such delay, including, but not limited to, Owner's staff costs, the cost of all additional services required by the <i>Owner</i> from the <i>Consultant</i> or any sub-consultants, project managers, or others employed or engaged by the <i>Owner</i> , and in particular, the costs of the <i>Consultant's</i> services during the period between the date of <i>Substantial Performance of the Work</i> stated in Article A-1 herein, as the same may be extended through the provision of these General Conditions, and any later or actual date of <i>Substantial Performance of the Work</i> achieved by the <i>Contractor</i> . 6.5.7 Without limiting the obligations of the <i>Contractor</i> described in GC 3.2 – CONSTRUCTION BY OWNER OR OTHER CONTRACTORS or GC 9.4 – CONSTRUCTION SAFETY, the <i>Owner</i> or <i>Consultant</i> may, by <i>Notice in Writing</i> , direct the <i>Contractor</i> to stop the <i>Work</i> where the <i>Owner</i> or <i>Consultant</i> determines that there is an imminent risk to the safety of persons or property at the <i>Place of the Work</i> . In the event that the <i>Contractor</i> receives such notice, it shall immediately stop the <i>Work</i> and secure the site. The <i>Contractor</i> shall not be entitled to an extension of the <i>Contract Time</i> or to an increase in the <i>Contract Price</i> unless the resulting delay, if any, would entitle the <i>Contractor</i> to an extension of the <i>Contact Time</i> or the reimbursement of the <i>Contractor's</i> costs as provided in paragraphs 6.5.1, 6.5.2 or 6.5.3. 6.5.8 No claim for delay shall be made by the <i>Contractor</i> and the <i>Contract Time</i> shall not be extended due to climatic conditions or arising from the <i>Contractor's</i> efforts to maintain the <i>Construction Schedule</i> ."

PART 7 DEFAULT NOTICE

SC42

GC 7.1 OWNER'S RIGHT TO PERFORM THE WORK, TERMINATE THE CONTRACTOR'S RIGHT TO CONTINUE WITH THE WORK OR TERMINATE THE CONTRACT

	7.1.2	In GC 7.1.2, <u>delete</u> the words "and if the <i>Consultant</i> has given a written statement to the <i>Owner</i> and <i>Contractor</i> which provides the detail of such neglect to perform the <i>Work</i> properly or such failure to comply with the requirements of the <i>Contract</i> to a substantial degree".
	7.1.3.4	<u>Add</u> a new subparagraph 7.1.3.4 as follows: ".4 an "acceptable schedule" as referred to in subparagraph 7.1.3.2. means a schedule approved by the <i>Consultant</i> and the <i>Owner</i> wherein the default can be corrected within the balance of the <i>Contract Time</i> and shall not cause delay to any other aspect of the <i>Work</i> or the work of other contractors, and in no event shall it be deemed to give a right to extend the <i>Contract Time</i> ."
	7.1.4.1	<u>Delete</u> subparagraph 7.1.4.1 and <u>replace</u> it with the following: ".1 correct such default and deduct the cost, including <i>Owner's</i> expenses, thereof from any payment then or thereafter due the <i>Contractor</i> ."
	7.1.4.2	<u>Delete</u> subparagraph 7.1.4.2 and <u>replace</u> it with the following: ".2 by providing <i>Notice in Writing</i> to the <i>Contractor</i> , terminate the <i>Contractor's</i> right to continue with the <i>Work</i> in whole or in part or terminate the <i>Contract</i> , and publish a notice of termination (Form 8) in accordance with the <i>Act</i> ."
	7.1.5.3	In subparagraph 7.1.5.3 <u>delete</u> the words: "however, if such cost of finishing the <i>Work</i> is less than the unpaid balance of the <i>Contract Price</i> , the <i>Owner</i> shall pay the <i>Contractor</i> the difference"
	7.1.6 to 7.1.10	<u>Delete</u> GC 7.1.6 and <u>replace</u> it with new paragraphs 7.1.6, 7.1.7, 7.1.8, 7.1.9 and 7.1.10 as follows: "7.1.6 In addition to its right to terminate the <i>Contract</i> set out herein, the <i>Owner</i> may terminate this <i>Contract</i> at any time for any other reason and without cause upon giving the <i>Contractor</i> fifteen (15) <i>Working Days Notice in Writing</i> to that effect. In such event, the <i>Contractor</i> shall be entitled to be paid for all <i>Work</i> performed including reasonable profit, for loss sustained upon <i>Products</i> and <i>Construction Equipment</i> , and such other damages as the <i>Contractor</i> may have sustained as a result of the termination of the <i>Contract</i> , but in no event shall the <i>Contractor</i> be entitled to be compensated for any loss of profit on unperformed portions of the <i>Work</i> , or indirect, special, or consequential damages incurred. 7.1.7 The <i>Owner</i> may suspend <i>Work</i> under this <i>Contract</i> at any time for any reason and without cause upon giving the <i>Contractor Notice in Writing</i> to that effect. In such event, the <i>Contractor</i> shall be entitled to be paid for all <i>Work</i> 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 <i>Products</i> and <i>Construction Equipment</i> , and such other damages as the <i>Contractor</i> may have sustained as a result of the suspension of the <i>Work</i> , but in no event shall the <i>Contractor</i> be entitled to be compensated for any indirect, special, or consequential damages incurred. In the event that the suspension continues for more than thirty (30) calendar days, the <i>Contract</i> shall be deemed to be terminated and the provisions of paragraph 7.1.6 shall apply. 7.1.8 In the case of either a termination of the <i>Contract</i> or a suspension of the <i>Work</i> under GC 7.1 - OWNER'S RIGHT TO PERFORM THE WORK, TERMINATE THE CONTRACTOR'S RIGHT TO CONTINUE WITH THE WORK, OR TERMINATE THE CONTRACT or GC 7.2 - CONTRACTOR'S RIGHT TO SUSPEND THE WORK OR TERMINATE THE CONTRACT, the <i>Contractor</i> shall use its best commercial efforts to mitigate the financial consequences to the <i>Owner</i> arising out of the termination or suspension, as the case may be.

		7.1.9 Upon the resumption of the <i>Work</i> following a suspension under GC 7.1 - OWNER'S RIGHT TO PERFORM THE WORK, TERMINATE THE CONTRACTOR'S RIGHT TO CONTINUE WITH THE WORK, OR TERMINATE THE CONTRACT or GC 7.2 - CONTRACTOR'S RIGHT TO SUSPEND THE WORK OR TERMINATE THE CONTRACT, the <i>Contractor</i> will endeavour to minimize the delay and financial consequences arising out of the suspension. 7.1.10 The <i>Contractor's</i> obligations under the <i>Contract</i> as to quality, correction, and warranty of the <i>Work</i> performed by the <i>Contractor</i> up to the time of termination or suspension shall continue after such termination of the <i>Contract</i> or suspension of the <i>Work</i>."

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GC 7.2 CONTRACTOR'S RIGHT TO SUSPEND THE WORK OR TERMINATE THE CONTRACT

	7.2.2	<u>Delete</u> paragraph 7.2.2 and <u>replace</u> it with the following: "7.2.2 If the <i>Work</i> is suspended or otherwise delayed for a period of 40 consecutive <i>Working Days</i> or more under a stop work order issued by a court or other public authority on account of a breach, violation, contravention, or a failure to abide by any laws, ordinances, rules, regulations, or codes directly by the <i>Owner</i>, the <i>Owner's</i> other contractor(s), or the <i>Consultant</i>, and relating to the <i>Work</i> or the <i>Place of the Work</i>, the <i>Contractor</i> may, without prejudice to any other right or remedy the <i>Contractor</i> may have, terminate the <i>Contract</i> by giving the <i>Owner</i> Notice in <i>Writing</i> to that effect."
	7.2.3.1	<u>Delete</u> subparagraph 7.2.3.1 in its entirety.
	7.2.3.2	<u>Delete</u> subparagraph 7.2.3.2 in its entirety.
	7.2.3.4	In subparagraph 7.2.3.4, <u>delete</u> the words "except for GC 5.1 - FINANCING INFORMATION REQUIRED OF THE OWNER".
	7.2.5	<u>Delete</u> paragraph 7.2.5 and <u>replace</u> it with the following: "7.2.5 If the default cannot be corrected within the 5 <i>Working Days</i> specified in paragraph 7.2.4, the <i>Owner</i> shall be deemed to have cured the default if it: .1 commences correction of the default within the specified time; .2 provides the <i>Contractor</i> with an acceptable schedule for such correction; and, .3 completes the correction in accordance with such schedule."
	7.2.6 to 7.2.9	<u>Add</u> new paragraphs 7.2.6, 7.2.7, 7.2.8 and 7.2.9 as follows: "7.2.6 If the <i>Contractor</i> terminates the <i>Contract</i> under the conditions described in GC 7.2 – CONTRACTOR'S RIGHT TO SUSPEND THE WORK OR TERMINATE THE CONTRACT, the <i>Contractor</i> shall be entitled to be paid for all <i>Work</i> performed to the date of termination, as determined by the <i>Consultant</i>. The <i>Contractor</i> shall also be entitled to recover the direct costs associated with termination, including the costs of demobilization and losses sustained on <i>Products</i> and <i>Construction Equipment</i>. The <i>Contractor</i> shall not be entitled to any recovery for any special, indirect or consequential losses, including loss of profit.

		7.2.7 The <i>Contractor</i> shall not be entitled to give notice of the <i>Owner's</i> default or terminate the <i>Contract</i> in the event the <i>Owner</i> withholds certificates or payment or both in accordance with the <i>Contract</i> because of: .1 the <i>Contractor's</i> failure to pay all legitimate claims promptly, or .2 the failure of the <i>Contractor</i> to discharge construction liens which are registered against the title to the <i>Place of the Work</i>. 7.2.8 The <i>Contractor's</i> obligations under the <i>Contract</i> as to quality, correction and warranty of the <i>Work</i> performed by the <i>Contractor</i> up to the effective date of termination shall continue in force and shall survive termination of this <i>Contract</i> by the <i>Contractor</i>. 7.2.9 If the <i>Contractor</i> suspends the <i>Work</i> or terminates the <i>Contract</i> as provided for in GC 7.2 – CONTRACTOR'S RIGHT TO SUSPEND THE WORK OR TERMINATE THE CONTRACT, the <i>Contractor</i> shall ensure the site and the <i>Work</i> are left in a safe, secure condition as required by authorities having jurisdiction at the <i>Place of the Work</i> and the <i>Contract Documents</i>."

PART 8 DISPUTE RESOLUTION

SC45 GC 8.1 AUTHORITY OF THE CONSULTANT

	8.1.3	<u>Delete</u> paragraph 8.1.3 in its entirety and <u>substitute</u> as follows: "8.1.3 If a dispute is not resolved promptly, the <i>Consultant</i> will give such instruction as in the <i>Consultant's</i> opinion are necessary for the proper performance of the <i>Work</i> and to prevent delays pending settlement of the dispute. The parties shall act immediately according to such instructions, it being understood that by doing so neither party will jeopardize any claim the party may have."

SC46 GC 8.2 ADJUDICATION

	8.2.2 to 8.2.7	<u>Add</u> new GC 8.2.2, 8.2.3, 8.2.4, 8.2.5, 8.2.6, and 8.2.7 as follows: "8.2.2 Save and except where the <i>Contractor</i> has given an undertaking, in accordance with the <i>Act</i>, to refer a dispute to <i>Adjudication</i>, prior to delivering a notice of <i>Adjudication</i> in a form prescribed by the <i>Act</i>, the parties agree to first address all disputes with at least one in-person meeting with the <i>Owner's</i> representative, the <i>Consultant's</i> representative, and the <i>Contractor's</i> representative. The parties agree that such steps will be taken to resolve any disputes in a timely and cost-effective manner. 8.2.3 Notwithstanding any other provisions in PART 8 DISPUTE RESOLUTION, the parties shall engage in <i>Adjudication</i> proceedings as required by, and in accordance with, the <i>Construction Act</i>. 8.2.4 The following procedures shall apply to any <i>Adjudication</i> the parties engage in under the <i>Construction Act</i>: .1 any hearings shall be held at a venue within the jurisdiction of the <i>Place of the Work</i> or such other venue as the parties may agree and which is acceptable to the adjudicator;

		.2 the <i>Adjudication</i> shall be conducted in English; .3 each party may be represented by counsel throughout an <i>Adjudication</i>; .4 there shall not be any oral communications with respect to issues in dispute that are the subject of an <i>Adjudication</i> between a party and the adjudicator unless it is made in the presence of both parties or their legal representatives; and .5 a copy of all written communications between the adjudicator and a party shall be given to the other party at the same time. 8.2.5 Any documents or information disclosed by the parties during an <i>Adjudication</i> are confidential and the parties shall not use such documents or information for any purpose other than the <i>Adjudication</i> in which they are disclosed and shall not disclose such documents and information to any third party, unless otherwise required by law, save and except the for the adjudicator. 8.2.6 If the <i>Contractor</i> fails to comply with any of the notice requirements set out in the <i>Contract</i>, including the time limits set out in any of the following: .1 GC 6.4 – CONCEALED OR UNKNOWN CONDITIONS; .2 GC 6.5 – DELAYS; .3 GC 6.6 – CLAIMS FOR A CHANGE IN CONTRACT PRICE; .4 PART 8 DISPUTE RESOLUTION .5 GC 9.2 – TOXIC AND HAZARDOUS SUBSTANCES .6 GC 9.3 – ARTIFACTS AND FOSSILS; or .7 GC 9.5 - MOULD in respect of any claim or dispute, the <i>Contractor</i> shall have no entitlement whatsoever (including to an increase in the <i>Contract Price</i>, or an extension of <i>Contract Time</i>) in the context of an <i>Adjudication</i> under the <i>Construction Act</i> and waives the right to make any such claims or disputes in an <i>Adjudication</i>. This GC 8.2.6 shall operate conclusively as an estoppel and bar in the event such claims or disputes are brought in an <i>Adjudication</i> and the <i>Owner</i> may rely on this GC 8.2.6 as a complete defence to any such claims or disputes. 8.2.7 The parties hereby acknowledge and agree, .1 that counterclaims, claims of set-off or the exercise or use of other contractual rights that permit the <i>Owner</i> to withhold, deduct or retain from monies otherwise owed to the <i>Contractor</i> under the <i>Contract</i> may be referred to, and included as part of, <i>Adjudications</i> under the <i>Construction Act</i>; .2 that disputes related to the termination or abandonment of the <i>Contract</i>, as well as any disputes that arise or are advanced following the termination or abandonment of the <i>Contract</i>, shall not be referred to <i>Adjudication</i> under the <i>Construction Act</i>; .3 that notice(s) of <i>Adjudication</i>, with respect to any dispute or claim relating to the <i>Project</i>, shall not be given, and no <i>Adjudication</i> shall be commenced following <i>Contract</i> completion, <i>Contract</i> abandonment, or termination of the <i>Contract</i>; .4 that any <i>Adjudication</i> between the <i>Contractor</i> and a <i>Subcontractor</i> or a supplier that relates to an <i>Adjudication</i> between the <i>Owner</i> and the <i>Contractor</i> shall be joined together to be adjudicated by a single adjudicator, provided that the adjudicator agrees to do so, and the <i>Contractor</i> shall include a provision in each of its contracts that contain an equivalent obligation to this GC 8.2.7.4; and

		.5 that, other than where the <i>Contractor</i> is obliged to commence an <i>Adjudication</i> pursuant to an undertaking under the <i>Construction Act</i> , neither the <i>Owner</i> nor the <i>Contractor</i> shall commence an <i>Adjudication</i> during the <i>Restricted Period</i> .
	8.2.8	The parties acknowledge and agree that no <i>Adjudication</i> , arbitration, action, suit or other proceeding may be brought by the <i>Contractor</i> against the <i>Owner</i> in respect of a claim for an increase to the <i>Contract Price</i> as set out in GC 6.6, before the <i>Consultant</i> has issued its findings in respect of same, pursuant to GC 6.6.5. For greater clarity and without limiting the foregoing, the amount applied for in each <i>Proper Invoice</i> shall not include any amounts pertaining to the <i>Contractor's</i> claim for an increase in <i>Contract Price</i> unless and until the <i>Consultant</i> has issued a written notice to the <i>Contractor</i> regarding the validity of such claim, as provided for in GC 6.6.5. However, nothing in this GC 8.2.8 shall prevent a <i>Contractor</i> from commencing an <i>Adjudication</i> where, pursuant to the <i>Construction Act</i> , the <i>Contractor</i> is required to give an undertaking to a <i>Subcontractor</i> to commence an <i>Adjudication</i> following delivery of a <i>Notice of Non-Payment</i> ."

SC47 GC 8.3 NEGOTIATION, MEDIATION AND ARBITRATION

	8.3.1	<u>Amend</u> paragraph 8.3.1 by changing part of the second line from "shall appoint a <i>Project Mediator</i> " to "may appoint a <i>Project Mediator</i> , except that such an appointment shall only be made if both the <i>Owner</i> and the <i>Contractor</i> agree."
	8.3.4	<u>Amend</u> paragraph 8.3.4 by changing part of the second line from "the parties shall request the <i>Project Mediator</i> " to "and subject to paragraph 8.3.1 the parties may request the <i>Project Mediator</i> ".
	8.3.6 to 8.3.9	<u>Delete</u> paragraphs 8.3.6, 8.3.7 and 8.3.8 in their entirety and <u>replace</u> them with the following new GCs 8.3.6, 8.3.7, 8.3.8, and 8.3.9: 8.3.6 The dispute may be finally resolved by arbitration under the Rules for Arbitration of Construction Disputes as provided in CCDC 40 in effect at the time of bid closing, provided that both the <i>Contractor</i> and the <i>Owner</i> agree. If the <i>Contractor</i> and the <i>Owner</i> agree to resolve the dispute by arbitration, the arbitration shall be conducted in the jurisdiction of the <i>Place of the Work</i>. 8.3.7 Prior to delivering a notice of <i>Adjudication</i> in a form prescribed by the <i>Act</i>, the parties agree to first address all disputes by attending at least one meeting with the <i>Owner's</i> representative, the <i>Consultant's</i> representative, and the <i>Contractor's</i> representative, prior to commencing an <i>Adjudication</i>. The parties agree that such steps will be taken to resolve any disputes in a timely and cost effective manner. If a resolution to the dispute(s) is not made at such a meeting, any party who plans to commence an <i>Adjudication</i> shall provide the other party with 5 <i>Working Days' Notice in Writing</i> of its intention to issue a notice of <i>Adjudication</i>. 8.3.8 Other than where the <i>Contractor</i> is obliged to commence an <i>Adjudication</i> pursuant to an undertaking under the <i>Construction Act</i>, neither the <i>Owner</i> nor the <i>Contractor</i> shall commence an <i>Adjudication</i> during the <i>Restricted Period</i>. 8.3.9 Where either party has delivered a notice of <i>Adjudication</i> in a form prescribed by the <i>Act</i>, the procedures and rules set out under the <i>Construction Act</i> and the regulations thereto shall govern the <i>Adjudication</i>."

PART 9 PROTECTION OF PERSONS AND PROPERTY

SC47 GC 9.1 PROTECTION OF WORK AND PROPERTY

	9.1.1.1	Delete subparagraph 9.1.1.1 in its entirety and <u>substitute</u> the following: “.1 errors in the <i>Contract Documents</i> which the <i>Contractor</i> could not have discovered applying the standard of care described in paragraph 3.14.1;”
	9.1.2	Delete paragraph 9.1.2 in its entirety and <u>substitute</u> as follows: “9.1.2 Before commencing any <i>Work</i> , the <i>Contractor</i> shall determine the locations of all underground or hidden utilities and structures indicated in or inferable from the <i>Contract Documents</i> , or that are inferable from an inspection of the <i>Place of the Work</i> exercising the degree of care and skill described in paragraph 3.14.1.”
	9.1.5	Add new paragraph 9.1.5 as follows: “9.1.5 With respect to any damage to which paragraphs 9.1.3 or 9.1.4 apply, the <i>Contractor</i> shall neither undertake to repair or replace any damage whatsoever to the work of other contractors, or to adjoining property, nor acknowledge that the same was caused or occasioned by the <i>Contractor</i> , without first consulting the <i>Owner</i> and receiving written instructions as to the course of action to be followed from either the <i>Owner</i> or the <i>Consultant</i> . Where, however, there is danger to life, the environment, or public safety, the <i>Contractor</i> shall take such emergency action as it deems necessary to remove the danger.”

SC48 GC 9.2 TOXIC AND HAZARDOUS SUBSTANCES

	9.2.1	Amend GC 9.2.1 by <u>inserting</u> the following to the end of the paragraph: “For the purposes of GC 9.2 – TOXIC AND HAZARDOUS SUBSTANCES, <i>Excess Soil</i> shall not be considered a ‘toxic and hazardous substance’.”
	9.2.5.5	Add a new subparagraph 9.2.5.5 as follows: “.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.”
	9.2.6	<u>Amend</u> GC 9.2.6 by <u>adding</u> the following words after the word “responsible” in the second line: “or whether any toxic or hazardous substances or materials already at the <i>Place of the Work</i> (and which were then harmless or stored, contained or otherwise dealt with in accordance with legal and regulatory requirements) were dealt with by the <i>Contractor</i> or anyone for whom the <i>Contractor</i> 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 <i>Owner</i> or others,”.
	9.2.8	<u>Amend</u> GC 9.2.8 by <u>adding</u> the following words after the word “responsible” in the second line: “or whether any toxic or hazardous substances or materials already at the <i>Place of the Work</i> (and which were then harmless or stored, contained or otherwise dealt with in accordance with legal and regulatory requirements) were dealt with by the <i>Contractor</i> or anyone for whom the <i>Contractor</i> 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 <i>Owner</i> or others,”.
	9.2.10	<u>Add</u> new paragraph 9.2.10 as follows: “9.2.10 The <i>Contractor</i>, <i>Subcontractors</i> and <i>Suppliers</i> shall not bring on to the <i>Place of the Work</i> any toxic or hazardous substances and materials except as required in order to perform the <i>Work</i>. If such toxic or hazardous substances or materials are required, storage in quantities sufficient to allow work to proceed to the end of any current work week only shall be permitted. All such toxic and hazardous materials and substances shall be handled and disposed of only in accordance with all laws and regulations that are applicable at the <i>Place of the Work</i>.”

SC49 GC 9.4 CONSTRUCTION SAFETY

	9.4.1	<u>Delete</u> GC 9.4.1 in its entirety and <u>replace</u> it with the following: “9.4.1 The <i>Contractor</i> shall be solely responsible for construction safety at the <i>Place of the Work</i> and for compliance with the rules, regulations, and practices required by the <i>OHSA</i>, including, but not limited to those of the “constructor”, and shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the <i>Work</i>. The <i>Contractor’s</i> health and safety program documentation shall be made available for review by the <i>Owner</i> or <i>Consultant</i> immediately upon request. Without limiting the foregoing, the <i>Contractor</i> shall be solely responsible for construction safety in respect of the <i>Consultant</i>, <i>Subcontractors</i> and <i>Suppliers</i>, the <i>Owner’s</i> own forces, <i>Other Contractors</i>, and all persons attending the <i>Place of the Work</i> during the course of the <i>Project</i>.”
	9.4.2	Amend GC 9.4.2 by <u>adding</u> the following words after “and the <i>Contractor</i> ”: “, <i>Subcontractors</i> and <i>Suppliers</i> ”.
	9.4.3	Amend GC 9.4.3 by <u>adding</u> the following words after “and the <i>Contractor</i> ”: “, <i>Subcontractors</i> and <i>Suppliers</i> ”.
	9.4.4	<u>Delete</u> GC 9.4.4 and replace it with the following: “9.4.4 The <i>Owner</i> undertakes to include in its contracts with other contractors and in its instructions to its own forces the requirement that the other contractor or its own forces, as the case may be, comply with the policies and procedures of and the directions and instructions from the <i>Contractor</i> with respect to occupational health and safety and related matters.”
	9.4.5	<u>Delete</u> GC 9.4.5 in its entirety and <u>replace</u> it with the following: “9.4.5 Prior to the commencement of the <i>Work</i>, the <i>Contractor</i> shall submit to the <i>Owner</i>: .1 a current WSIB clearance certificate; .2 copies of the <i>Contractor’s</i> insurance policies having application to the <i>Project</i> or certificates of insurance, at the option of the <i>Owner</i>; .3 documentation setting out the <i>Contractor’s</i> in-house safety programs;

		.4 a copy of the Notice of Project filed with the Ministry of Labour naming itself as “constructor” under the <i>OHS</i>A; and . 5 copies of any documentation or notices to be filed or delivered to the authorities having jurisdiction for the regulation of occupational health and safety at the <i>Place of the Work</i>,”
	9.4.6 to 9.4.12	<u>Add</u> new GC 9.4.6, 9.4.7, 9.4.8, 9.4.9, 9.4.10, 9.4.11, and 9.4.12 as follows: “9.4.6 The <i>Contractor</i> shall indemnify and save harmless the <i>Owner</i>, its agents, trustees, officers, directors, employees, consultants, successors, appointees, and assigns from and against the consequences of any and all safety infractions committed by the <i>Contractor</i> under <i>OHS</i>A and any other occupational health and safety legislation in force at the <i>Place of the Work</i> including the payment of legal fees and disbursements on a solicitor and client basis. Such indemnity shall apply to the extent to which the <i>Owner</i> is not covered by insurance. 9.4.7 If the <i>Owner</i> is of the reasonable opinion that the <i>Contractor</i> has not taken such precautions as are necessary to ensure compliance with the requirements of paragraph 9.4.1, the <i>Owner</i> may take any remedial measures which it deems necessary, including stopping the performance of all or any portion of the <i>Work</i>, and the <i>Owner</i> may use its employees, the <i>Contractor</i>, any <i>Subcontractor</i> or any other contractors to perform such remedial measures. 9.4.8 The <i>Contractor</i> shall file any notices or any similar document required pursuant to the <i>Contract</i> or the safety regulations in force at the <i>Place of the Work</i>. This duty of the <i>Contractor</i> will be considered to be included in the <i>Work</i> and no separate payment therefore will be made to the <i>Contractor</i>. 9.4.9 Unless otherwise provided in the <i>Contract Documents</i>, the <i>Contractor</i> shall develop, maintain and supervise for the duration of the <i>Work</i> a comprehensive safety program that will effectively incorporate and implement all required safety precautions. The program shall, at a minimum, respond fully to the applicable safety regulations and general construction practices for the safety of persons or property, including, without limitation, any general safety rules and regulations of the <i>Owner</i> and any workers’ compensation or occupational health and safety statutes or regulations in force at the <i>Place of the Work</i>. 9.4.10 The <i>Contractor</i> shall provide a copy of the safety program described in GC 9.4.9 hereof to the <i>Consultant</i> for delivery to the <i>Owner</i> prior to the commencement of the <i>Work</i>, and shall, ensure, as far as it is reasonably practical to do so, that every employer and worker performing work in respect of the <i>Project</i> complies with such program. 9.4.11 The <i>Contractor</i> shall arrange regular safety meetings, and shall supply and maintain, at its own expense, at its office or other well-known place at the job site, safety equipment necessary to protect the workers and general public against accident or injury as prescribed by the authorities having jurisdiction at the <i>Place of the Work</i>, including, without limitation, articles necessary for administering first-aid to any person and an emergency procedure for the immediate removal of any injured person to a hospital or a doctor’s care. 9.4.12 The <i>Contractor</i> shall promptly report in writing to the <i>Owner</i> and the <i>Consultant</i> all accidents of any sort arising out of or in connection with the performance of the <i>Work</i>, 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 <i>Contractor</i> to the <i>Owner</i> and the <i>Consultant</i> by telephone

		or messenger in addition to any reporting required under the applicable safety regulations.”.

PART 10 GOVERNING REGULATIONS

SC50 GC 10.1 TAXES AND DUTIES

	10.1.2	<u>Amend</u> paragraph 10.1.2 by <u>adding</u> the following sentence to the end of the paragraph: “For greater certainty, the <i>Contractor</i> shall not be entitled to any mark-up for overhead or profit on any increase in such taxes and duties and the <i>Owner</i> shall not be entitled to any credit relating to mark-up for overhead or profit on any decrease in such taxes. The <i>Contractor</i> shall provide a detailed breakdown of <u>Additional</u> taxes if requested by the <i>Owner</i> in a form satisfactory to the <i>Owner</i> .”
	10.1.3	<u>Add</u> new paragraph 10.1.3 as follows: “10.1.3 Where the <i>Owner</i> is entitled to an exemption or a recovery of sales taxes, customs duties, excise taxes or <i>Value Added Taxes</i> applicable to the <i>Contract</i> , the <i>Contractor</i> shall, at the request of the <i>Owner</i> , assist with the 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 <i>Owner</i> . The <i>Contractor</i> agrees to endorse over to the <i>Owner</i> any cheques received from the federal or provincial governments, or any other taxing authority, as may be required to give effect to this paragraph.”

SC51 GC 10.2 LAWS, NOTICES, PERMITS, AND FEES

	10.2.5	<u>Amend</u> paragraph 10.2.5 by <u>adding</u> the words “Subject to paragraph 3.4” at the beginning of the paragraph. -and- <u>Add</u> the following to the end of the second sentence: “...and no further <i>Work</i> on the affected components of the <i>Contract</i> shall proceed until these directives have been obtained by the <i>Contractor</i> from the <i>Consultant</i> .”
	10.2.6	<u>Amend</u> paragraph 10.2.6 by <u>adding</u> the following sentence to the end of the paragraph: “In the event the <i>Owner</i> suffers loss or damage as a result of the <i>Contractor</i> ’s failure to comply with paragraph 10.2.5 and notwithstanding any limitations described in paragraph 12.1.1, the <i>Contractor</i> agrees to indemnify and to hold harmless the <i>Owner</i> and the <i>Consultant</i> from and against any claims, demands, losses, costs, damages, actions suits or proceedings resulting from such failure by the <i>Contractor</i> .”
	10.2.7	<u>Amend</u> paragraph 10.2.7 by inserting the words “which changes were not, or could not have reasonably been known to the <i>Owner</i> or to the <i>Contractor</i> , as applicable, at the time of bid closing and which changes did not arise as a result of a public emergency or other <i>Force Majeure</i> event” to the second line, after the words “authorities having jurisdiction”.
	10.2.8	<u>Add</u> new paragraph 10.2.8 as follows: “10.2.8 The <i>Contractor</i> shall furnish all certificates that are required or given by the appropriate governmental authorities as evidence that the <i>Work</i> as installed

		conforms with the laws and regulations of authorities having jurisdiction, including certificates of compliance for the <i>Owner's</i> occupancy or partial occupancy. The certificates are to be final certificates giving complete clearance of the <i>Work</i> , in the event that such governmental authorities furnish such certificates."

SC52 GC 10.4 WORKERS' COMPENSATION

	10.4.1	<u>Delete</u> paragraph 10.4.1 and <u>replace</u> with the following: "10.4.1 Prior to commencing the <i>Work</i>, and with each and every application for payment thereafter, including the <i>Contractor's</i> application for payment of the holdback amount following <i>Substantial Performance of the Work</i> and again with the <i>Contractor's</i> application for final payment, the <i>Contractor</i> shall provide evidence of compliance with workers' compensation legislation in force at the <i>Place of the Work</i>, including payments due thereunder."

SC53 GC 11.1 INSURANCE

	11.1	<u>Delete</u> entirety of GC 11.1 and <u>replace</u> with the following: "GC 11.1 INSURANCE 11.1.1 Without restricting the generality of GC 12 – INDEMNIFICATION, the <i>Contractor</i> shall provide, maintain, and pay for the insurance coverages specified in GC 11.1 – INSURANCE. Unless otherwise stipulated, the duration of each insurance policy shall be from the date of commencement of the <i>Work</i> until the expiration of the warranty periods set out in the <i>Contract Documents</i>. Prior to commencement of the <i>Work</i> and upon the placement, renewal, <u>amendment</u>, or extension of all or any part of the insurance, the <i>Contractor</i> shall promptly provide the <i>Owner</i> 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 <u>amending</u> endorsements. .1 General Liability Insurance General liability insurance shall be in the name of the <i>Contractor</i>, with the <i>Owner</i> and the <i>Consultant</i> and the City or Municipality where the <i>Work</i> is taking place named as <u>Additional insureds</u>, with limits of not less than \$5,000,000.00 inclusive per occurrence for bodily injury, death, and damage to property, including loss of use thereof, for itself and each of its employees, <i>Subcontractors</i> and/or agents. The insurance coverage shall not be less than the insurance required by IBC Form 2100, or its equivalent <u>replacement</u>, 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 <i>Ready-for-Takeover</i>, as set out in the certificate of <i>Ready-for-Takeover</i>, on an ongoing basis for a period of 6 years following <i>Ready-for-Takeover</i>. Where the <i>Contractor</i> maintains a single, blanket policy, the <u>Addition</u> of the <i>Owner</i> and the <i>Consultant</i> is limited to liability arising out of the <i>Project</i> and all operations necessary or incidental thereto. The policy shall be endorsed to provide the <i>Owner</i> with not less than 30 days' notice, in writing, in advance of any cancellation and of change or <u>amendment</u> restricting coverage. .2 Automobile Liability Insurance

		Automobile liability insurance in respect of licensed vehicles shall limits of not less than \$2,000,000.00 inclusive per occurrence for bodily injury, death and damage to property, covering all licensed vehicles <i>owned</i> or leased by the <i>Contractor</i>, and endorsed to provide the <i>Owner</i> with not less than 30 days' notice, in writing, in advance of any cancellation, change or <u>amendment</u> restricting coverage. Where the policy has been issued pursuant to a government-operated automobile insurance system, the <i>Contractor</i> shall provide the <i>Owner</i> with confirmation of automobile insurance coverage for all automobiles registered in the name of the <i>Contractor</i>. .3 Aircraft and Watercraft Liability Insurance Where determined necessary by the <i>Contractor</i>, acting reasonably, aircraft and watercraft liability insurance will be obtained in accordance with the provisions of paragraph 11.1.3. Aircraft and watercraft liability insurance with respect to owned or non-owned aircraft and watercraft if used directly or indirectly in the performance of the <i>Work</i>, including use of <u>Additional</u> premises, shall be subject to limits of not less than \$2,000,000.00 inclusive per occurrence for bodily injury, death and damage to property, including loss of use thereof and limits of not less than \$2,000,000.00 for aircraft passenger hazard. Such insurance shall be in a form acceptable to the <i>Owner</i>. The policies shall be endorsed to provide the <i>Owner</i> with not less than 30 days' notice, in writing, in advance of cancellation, change or <u>amendment</u> restricting coverage. .4 Property and Boiler and Machinery Insurance (1) Builder's Risk property insurance shall be in the name of the <i>Contractor</i> with the <i>Owner</i> and the <i>Consultant</i> named as <u>Additional</u> 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 <i>Work</i>, whether owned by the <i>Contractor</i> or the owner or owned by others, so long as the property forms part of the <i>Work</i>. 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 \$10,000.00 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 <u>replacement</u> provided that the IBC Form 4042 shall include the latest <u>Addition</u> of the relevant CCDC endorsement form. The coverage shall be based on a completed value form and shall be maintained continuously until ten (10) days after the date of the final certificate of payment. (2) Boiler and machinery insurance shall be in the name of the <i>Contractor</i>, with the <i>Owner</i> and the <i>Consultant</i> named as <u>Additional</u> insureds, for not less than the <u>replacement</u> value of the boilers, pressure vessels and other insurable objects forming part of the <i>Work</i>. 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 <i>Work</i>. (4) The policies shall provide that, in the case of a loss or damage, payment shall be made to the <i>Owner</i> and the <i>Contractor</i> as their respective interests may appear. The <i>Contractor</i> shall act on behalf of the <i>Owner</i> 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 <i>Contractor</i> shall proceed to restore the <i>Work</i>. Loss or damage shall not affect the rights and obligations of either party under the <i>Contract</i> except that the <i>Contractor</i> shall be entitled to such reasonable extension of the <i>Contract Time</i>, relative to the extent of the loss or damage, as determined by the <i>Owner</i>, in its sole discretion. (5) The <i>Contractor</i> shall be entitled to receive from the <i>Owner</i>, in <u>Addition</u> to the amount due under the <i>Contract</i>, the amount at which the <i>Owner's</i> interest in restoration of the <i>Work</i> has been appraised, such amount to be paid as the restoration of the <i>Work</i> proceeds and as provided in GC 5.2 – APPLICATIONS FOR PROGRESS PAYMENT and GC 5.3 – PROGRESS PAYMENT. In <u>Addition</u>, the <i>Contractor</i> shall be entitled to receive from the payments made by the insurer the amount of the <i>Contractor's</i> interest in the restoration of the <i>Work</i>. (6) In the case of loss or damage to the <i>Work</i> arising from the work of other contractors, or the <i>Owner's</i> own forces, the <i>Owner</i>, in accordance with the <i>Owner's</i> obligations under paragraph 3.2.2.4 of GC 3.2 – CONSTRUCTION BY OWNER OR OTHER CONTRACTORS, shall pay the <i>Contractor</i> the cost of restoring the <i>Work</i> as the restoration of the <i>Work</i> proceeds and as provided in GC 5.2 – APPLICATIONS FOR PROGRESS PAYMENT and GC 5.3 – PROGRESS PAYMENT. .5 Contractors' Equipment Insurance "All risks" contractors' equipment insurance covering construction machinery and equipment used by the <i>Contractor</i> for the performance of the <i>Work</i>, excluding boiler insurance, shall be in a form acceptable to the <i>Owner</i> and shall not allow subrogation claims by the insurer against the <i>Owner</i>. The policies shall be endorsed to provide the <i>Owner</i> with not less than 30 days' notice, in writing, in advance of cancellation, change or <u>amendment</u> restricting coverage. Subject to satisfactory proof of financial capability by the <i>Contractor</i> for self-insurance of his equipment, the <i>Owner</i> agrees to waive the equipment insurance requirement. 11.1.2 The <i>Contractor</i> shall be responsible for deductible amounts under the policies except where such amounts may be excluded from the <i>Contractor's</i> responsibility by the terms of GC 9.1 - PROTECTION OF WORK AND PROPERTY and GC 9.2 - DAMAGES AND MUTUAL RESPONSIBILITY. 11.1.3 Where the full insurable value of the <i>Work</i> is substantially less than the <i>Contract Price</i>, the <i>Owner</i> may reduce the amount of insurance required to waive the course of construction insurance requirement. 11.1.4 If the <i>Contractor</i> fails to provide or maintain insurance as required by the <i>Contract Documents</i>, then the <i>Owner</i> shall have the right to provide and maintain such insurance and provide evidence of same to the <i>Contractor</i>. The <i>Contractor</i> shall pay the costs thereof to the <i>Owner</i> on demand, or the <i>Owner</i> may deduct the amount that is due or may become due to the <i>Contractor</i>. 11.1.5 All required insurance policies shall be with insurers licensed to underwrite insurance in the jurisdiction of the <i>Place of the Work</i>."

SC54 *NEW* GC 11.2 CONTRACT SECURITY

	GC 11.2	<u>Add</u> new GC 11.2 – CONTRACT SECURITY as follows: "GC 11.2 CONTRACT SECURITY

		11.2.1 The <i>Contractor</i> shall, prior to the execution of the <i>Contract</i>, furnish a performance bond and labour and material payment bond which meets the requirements under paragraph 11.2.2. 11.2.2 The performance bond and labour and material payment bond shall: .1 be issued by a duly licensed surety company, which has been approved by the <i>Owner</i> and is permitted under the <i>Construction Act</i>, .2 be issued by an insurer licensed under the <i>Insurance Act</i> (Ontario) and authorized to transact a business of suretyship in the Province of Ontario; .3 shall be in the form prescribed by the <i>Construction Act</i>; .4 have a coverage limit of at least 50 per cent of the <i>Contract Price</i>, or such other percentage of the <i>Contract Price</i> as stated in the <i>Contract Documents</i>; .5 extends protection to <i>Subcontractors</i>, <i>Suppliers</i>, and any other persons supplying labour or materials to the <i>Project</i>; and .6 shall be maintained in good standing until the fulfillment of the <i>Contract</i>, including all warranty and maintenance periods set out in the <i>Contract Documents</i>. 11.2.3 It is the intention of the parties that the performance bond shall be applicable to all of the <i>Contractor's</i> obligations in the <i>Contract Document</i> and, wherever a performance bond is provided with language which conflicts with this intention, it shall be deemed to be amended to comply. The <i>Contractor</i> represents and warrants to the <i>Owner</i> that it has provided its surety with a copy of the <i>Contract Documents</i> prior to the issuance of such bonds. 11.2.4 Without limiting the foregoing in any way, the bonds shall indemnify and hold harmless the <i>Owner</i> for and against costs and expenses (including legal and <i>Consultant</i> services and court costs) arising out of or as a consequence of any default of the <i>Contractor</i> under this <i>Contract</i>. 11.2.4 The <i>Contractor</i> shall be responsible for notifying the surety company of any changes made to the <i>Contract</i> during the course of construction. 11.2.5 The premiums for bonds required by the <i>Contract Documents</i> shall be included in the <i>Contract Price</i>. 11.2.6 Should the <i>Owner</i> require additional bonds by the <i>Contractor</i> or any of his <i>Subcontractors</i>, after the receipt of bids for the <i>Work</i>, the <i>Contract Price</i> shall be increased by all direct costs attributable to providing such bonds. The <i>Contractor</i> shall promptly provide the <i>Owner</i>, through the <i>Consultant</i>, with any such bonds that may be required."

PART 12 OWNER TAKEOVER

SC53 GC 12.1 READY-FOR-TAKEOVER

	12.1.1	<u>Delete</u> GC 12.1.1 in its entirety and <u>replace</u> it with the following: "12.1.1 <i>Ready-for-Takeover</i> shall be achieved when all of the following has occurred, as verified and approved by the <i>Owner</i>:

		.1 <i>Substantial Performance of the Work</i> has been achieved, as certified by the <i>Consultant</i>; .2 a permit for occupancy of the <i>Place of the Work</i> has been obtained from the authorities having jurisdiction; .3 the <i>Work</i> to be performed under the <i>Contract</i> has satisfied the requirements for deemed completion in accordance with Section 2(3) of the <i>Construction Act</i>; .4 final cleaning and waste removal, as required by the <i>Contract Documents</i>; .5 the <i>Contractor</i> has delivered to the <i>Consultant</i> and the <i>Owner</i> all inspection certificates from authorities having jurisdiction with respect to any component of the <i>Work</i> which has been completed; .6 subject only to GC 12.1.2, the entire <i>Work</i> has been completed to the requirements of the <i>Contract Documents</i>, including completion of all items on the punch list prepared at the time of <i>Substantial Performance of the Work</i> and the <i>Work</i> is being used for its intended purpose, and is so certified by the <i>Consultant</i>; .7 subject only to GC 12.1.2, the <i>Contractor</i> has submitted to the <i>Owner</i> and the <i>Consultant</i> in a collated and organized matter, all <i>Close-Out Documentation</i> and any other materials or documentation required by the <i>Contract Documents</i>; .8 subject only to GC 12.1.2, all <i>Products</i>, systems and components of the <i>Project</i> have been commissioned and certified for operation and accepted by the <i>Owner</i> and <i>Consultant</i>, and 9 subject only to GC 12.1.2, the <i>Contractor</i> has submitted to the <i>Owner</i> and the <i>Consultant</i> full and complete as-built drawings and <i>Specifications</i> revised by the <i>Contractor</i> to reflect the as-built state of the <i>Work</i>, clearly showing changes to the <i>Drawings</i> and <i>Specifications</i> from the original <i>Contract Documents</i>, all of which have been approved by the <i>Owner</i> acting reasonably."
	12.1.2	<u>Delete</u> GC 12.1.2 in its entirety and <u>replace</u> it with the following: "12.1.2 The <i>Owner</i> may, in its sole, absolute, and unfettered discretion, waive compliance with a requirement, or a part thereof, for achieving <i>Ready-for-Takeover</i> set out in GC 12.1.1.6 to 12.1.1.9 (inclusive). Where the <i>Owner</i> exercises the discretion afforded under this GC 12.1.2, the <i>Contractor</i> shall be required to comply with GC 5.5.1.2 as part of its application for final payment and the <i>Owner</i> and the <i>Contractor</i>, in consultation with the <i>Consultant</i>, shall establish a reasonable date for completing the <i>Work</i>."
	12.1.3	<u>Delete</u> GC 12.1.3 in its entirety and <u>replace</u> it with the following: "12.1.3 When the <i>Contractor</i> considers the <i>Work Ready-for-Takeover</i>, it shall submit a written application to the <i>Owner</i> and the <i>Consultant</i> for review."
	12.1.4	In GC 12.1.4, <u>delete</u> the words "list and" from the second line.
	12.1.5	<u>Delete</u> GC 12.1.5 in its entirety and <u>replace</u> it with the following:

		"12.1.5 Following the confirmation of the date of <i>Ready-for-Takeover</i> by the <i>Consultant</i> and as confirmed by the <i>Owner</i> , the <i>Contractor</i> may submit a final application for payment in accordance with GC 5.5 – FINAL PAYMENT."
	12.1.6	<u>Delete</u> GC 12.1.6 in its entirety.

SC56 GC 12.2 EARLY OCCUPANCY

	GC 12.2	<u>Delete</u> GC 12.2 – EARLY OCCUPANCY BY THE OWNER in its entirety, including all subparagraphs thereunder and <u>replace</u> it with the following: "12.2.1 The Owner reserves the right to take possession of and use for any intended purpose any portion or all of the undelivered portion of the Project even though the Work may not have reached Substantial Performance of the Work, provided that such taking possession and use will not unduly interfere, in any material way, with the progress of the Work. The taking of possession or use of any such portion of the Project shall not be deemed to be the Owner's acknowledgement or acceptance of the Work or Project nor shall it relieve the Contractor of any of its obligations under the Contract. 12.2.2 Whether 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 and 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."

SC57 GC 12.3 WARRANTY

	12.3.2	<u>Delete</u> from the first line of paragraph 12.3.2 the word "The" and <u>replace</u> it with the words "Subject to GC 1.1.3, the..."
	12.3.7 to 12.3.12	<u>Add</u> new paragraphs 12.3.7 to 12.3.12 as follows: "12.3.7 Where required by the <i>Contract Documents</i>, the <i>Contractor</i> shall provide a maintenance bond as security for the performance of the <i>Contractor's</i> obligations as set out in GC 12.3 WARRANTY. 12.3.8 The <i>Contractor</i> shall provide fully and properly completed and signed copies of all warranties and guarantees required by the <i>Contract Documents</i>, containing: .1 the proper name of the <i>Owner</i>; .2 the proper name and address of the <i>Project</i>; .3 the date the warranty commences, which shall be at the "<i>Ready-for-Takeover</i>" unless otherwise agreed upon by the <i>Consultant</i> in writing. .4 a clear definition of what is being warranted and/or guaranteed as required by the <i>Contract Documents</i>; and .5 the signature and seal (if required by the governing law of the <i>Contract</i>) of the company issuing the warranty, countersigned by the <i>Contractor</i>. 12.3.9 Should any <i>Work</i> be repaired or replaced during the time period for which it is covered by the specified warranty, a new warranty shall be provided under the

		same conditions and for the same period as specified herein before. The new warranty shall commence at the completion of the repair or replacement. 12.3.10 The <i>Contractor</i> shall ensure that its <i>Subcontractors</i> are bound to the requirements of GC 12.3 – WARRANTY for the <i>Subcontractor's</i> portion of the <i>Work</i>. 12.3.11 The <i>Contractor</i> shall ensure that all warranties, guarantees or other obligations for <i>Work</i>, services or <i>Products</i> performed or supplied by any <i>Subcontractor</i>, <i>Supplier</i> or other person in connection with the <i>Work</i> are obtained and available for the direct benefit of the <i>Owner</i>. In the alternative, the <i>Contractor</i> shall assign to the <i>Owner</i> all warranties, guarantees or other obligations for <i>Work</i>, services or <i>Products</i> performed or supplied by any <i>Subcontractor</i>, <i>Supplier</i> or other person in connection with the <i>Work</i> and such assignment shall be with the consent of the assigning party, where required by 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 <i>Owner</i> under the <i>Contract Documents</i>. 12.3.12 The <i>Contractor</i> shall commence or correct any deficiency within 2 <i>Working Days</i> after receiving a <i>Notice in Writing</i> from the <i>Owner</i> or the <i>Consultant</i>, and shall complete the <i>Work</i> 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 <i>Owner</i> 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 <i>Contractor</i> fail to provide this emergency service within 8 hours of a request being made during the normal business hours of the <i>Contractor</i>, the <i>Owner</i> is authorized, notwithstanding GC 3.1, to carry out all necessary repairs or replacements at the <i>Contractor's</i> expense."

PART 13 INDEMNIFICATION AND WAIVER

SC58 GC 13.1 INDEMNIFICATION

	GC 13.1	<u>Delete</u> GC 13.1 – INDEMNIFICATION in its entirety and <u>replace</u> it with the following: "13.1.1 The <i>Contractor</i> shall indemnify and hold harmless the <i>Owner</i>, its parent, subsidiaries and affiliates, their respective partners, trustees, officers, directors, agents and employees and the <i>Consultant</i> from and against any and all claims, liabilities, expenses, demands, losses, damages, actions, costs, suits, or proceedings (hereinafter called "claims"), whether in respect of claims suffered by the <i>Owner</i> or in respect of claims by third parties, that directly or indirectly arise out of, or are attributable to, the acts or omissions of the <i>Contractor</i>, its employees, agents, <i>Subcontractors</i>, <i>Suppliers</i> or any other persons for whom it is in law responsible (including, without limitation, claims that directly or indirectly arise out of, or are attributable to, loss of use or damage to the <i>Work</i>, the <i>Owner's</i> property or equipment, the <i>Contractor's</i> property or equipment or equipment or property adjacent to the <i>Place of the Work</i> or death or injury to the <i>Contractor's</i> personnel). 13.1.2 The <i>Owner</i> shall indemnify and hold the <i>Contractor</i>, its agents and employees harmless from and against claims, demands, losses, costs, damages, actions, suits or proceedings arising out of the <i>Contractor's</i> performance of the <i>Contract</i> which are attributable to a lack of or defect in title or an alleged lack of or defect in title to the <i>Place of the Work</i>. 13.1.3 The provisions of GC 13.1 - INDEMNIFICATION shall survive the termination of the <i>Contract</i>, 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 <i>Work</i> shall constitute a waiver or release of any of the provisions of GC 13.1
	13.1.4	Notwithstanding the provisions of GC1.1 - CONTRACT DOCUMENTS, GC 1.1.6, GC13.1 - INDEMNIFICATION shall govern over the provisions of GC 1.3.1 of GC1.3 – RIGHTS AND REMEDIES."

SC59 GC 13.2 WAIVER OF CLAIMS

	13.2.1	In paragraph 13.2.1 in the third line after the word "limitation" <u>add</u> the words "claims for delay pursuant to GC 6.5 DELAYS" -and- <u>add</u> the words "(collectively Claims)" after " <i>Ready-for-Takeover</i> " in the fourth line.
	13.2.1.1	In subparagraph 13.2.1.1, in each instance change the word "claims" to "Claims" and change the word "claim" to "Claim".
	13.2.1.2	In subparagraph 13.2.1.2 change the word "claims" to "Claims".
	13.2.1.3	<u>Delete</u> subparagraph 13.2.1.3 in its entirety.
	13.2.1.4	In paragraph 13.2.1.4 change the word "claims" to "Claims".
	13.2.2.1	In paragraph 13.2.2.1 <u>delete</u> the words "in paragraphs 13.2.1.2 and 13.2.1.3" and <u>replace</u> them with "in paragraph 13.2.1.2" -and- change the word "claims" to "Claims" in both instances and change the word "claim" to "Claim".
	13.2.3	<u>Delete</u> paragraph 13.2.3 in its entirety.
	13.2.4	<u>Delete</u> paragraph 13.2.4 in its entirety.
	13.2.5	<u>Delete</u> paragraph 13.2.5 in its entirety.
	13.2.6	In paragraph 13.2.6 change the word "claim" to "Claim" in all instances in the paragraph.
	13.2.8	In paragraph 13.2.8 change "The party" to "The <i>Contractor</i> " -and- change the word "claim" to "Claim" in all instances in the paragraph.
	13.2.9	In paragraph 13.2.9 <u>delete</u> the words "under paragraphs 13.2.1 or 13.2.3" and <u>replace</u> them with "under paragraph 13.2.1" -and- change both instances of the words "the party" to "the <i>Contractor</i> ". Change the word "claim" to "Claim" in all instances in the paragraph.

SC60 *NEW* PART 14 OTHER PROVISIONS

14.1	<u>Add</u> new PART 14 – OTHER PROVISIONS as follows: “PART 14 OTHER PROVISIONS GC 14.1 OWNERSHIP OF MATERIALS 14.1.1 Unless otherwise specified, all materials existing at the <i>Place of the Work</i> at the time of execution of the <i>Contract</i> shall remain the property of the <i>Owner</i>. All <i>Work</i> and <i>Products</i> delivered to the <i>Place of the Work</i> by the <i>Contractor</i> shall be the property of the <i>Owner</i>. The <i>Contractor</i> shall remove all surplus or rejected materials as its property when notified in writing to do so by the <i>Consultant</i>.”
14.2	<u>Add</u> new GC 14.2 – CONSTRUCTION LIENS as follows: “GC 14.2 LIENS 14.2.1 Notwithstanding any other provision in the <i>Contract</i>, the <i>Consultant</i> shall not be obligated to issue a certificate, and the <i>Owner</i> shall not be obligated to make payment, subject to the <i>Owner’s</i> requirement to issue a <i>Notice of Non-Payment</i> (Form 1.1) to the <i>Contractor</i>, if at the time such certificate or payment was otherwise due: .1 a claim for lien has been registered against the <i>Project</i> lands by a <i>Subcontractor</i> or a <i>Supplier</i> that has not been vacated or discharged by the <i>Contractor</i> in accordance with the requirements of this <i>Contract</i>, or .2 if the <i>Owner</i> or a mortgagee of the <i>Project</i> lands has received a written notice of a lien that has not been resolved by the <i>Contractor</i> through the posting of security or otherwise. 14.2.2 In the event a construction lien arising from the performance of the <i>Work</i> is registered or preserved against the <i>Project</i> lands by a <i>Subcontractor</i> or a <i>Supplier</i>, or a written notice of a lien is given or a construction lien action is commenced against the <i>Owner</i> by a <i>Subcontractor</i> or a <i>Supplier</i>, then the <i>Contractor</i> shall, at its own expense: .1 within 10 calendar days of registration of the construction lien, vacate or discharge the lien from title to the premises (i.e. the <i>Place of the Work</i>). If the lien is merely vacated, the <i>Contractor</i> shall, if requested, undertake the <i>Owner’s</i> defence of any subsequent action commenced in respect of the lien, at the <i>Contractor’s</i> sole expense; .2 within 10 calendar days of receiving notice of a written notice of a lien, post security with the Ontario Superior Court of Justice so that the written notice of a lien no longer binds the parties upon whom it was served; and .3 satisfy all judgments and pay all costs arising from such construction liens and actions and fully indemnify the <i>Owner</i> against all costs and expenses arising from same, including legal costs on a full indemnity basis. 14.2.3 In the event that the <i>Contractor</i> fails or refuses to comply with its obligations pursuant to paragraph 14.2.2, the <i>Owner</i> shall, at its option, be entitled to take all steps necessary to address any such construction liens including, without limitation and in addition to the <i>Owner’s</i> rights under paragraph 13.2.4, the posting of security with the Ontario Superior Court of Justice to vacate the claim for lien from title to the <i>Project</i> lands, and in so doing will be entitled to a full indemnity from the <i>Contractor</i> for all legal fees, security, disbursements and other costs

		incurred and will be entitled to deduct same from amounts otherwise owing to the <i>Contractor</i>. 14.2.4 In the event that any <i>Subcontractor</i> or <i>Supplier</i> registers any claim for lien with respect to all or part of the <i>Place of Work</i>, the <i>Owner</i> shall have the right to withhold, in addition to the statutory holdback, the full amount of said claim for lien plus either: (a) \$250,000 if the claim for lien is in excess of \$1,000,000 or (b) 25% of the value of the claim for lien and to bring a motion to vacate the registration of said claim for lien and any associated certificate of action in respect of that lien, in accordance with Section 44 of the <i>Act</i>, by paying into court as security the amount withheld. 14.2.5 Nothing in this GC 14.2 serves to preclude the <i>Contractor</i> from preserving and perfecting its lien in the event of non-payment by the <i>Owner</i>.”
	14.3	<u>Add</u> new GC 14.3 – SECURITY CLEARANCE REQUIREMENTS as follows: “GC 14.3 SECURITY CLEARANCE REQUIREMENTS 14.3.1 The Owner reserves the right to request that the Contractor conform to the following requirements at any time after award of contract. 14.3.2 Contractor and Subcontractor personnel working in the school premises may be required to obtain and pay for a Police Record Search Certificate of Clearance and/or Consent of Disclosure of Criminal Record Information, prior to entering or visiting the site. 14.3.3 Personnel who are unable to obtain a security clearance, or who refuse to consent to such security checks, upon notice by the Owner to the Contractor, will not be permitted to enter the site. 14.3.4 The Owner will not be responsible for any additional costs incurred by the Contractor and /or Sub-Contractors in obtaining alternative personnel.”
	14.4	<u>Add</u> new GC 14.4 – EQUIPMENT DISPOSAL AND DECOMMISSIONING as follows: “GC 14.4 EQUIPMENT DISPOSAL AND DECOMMISSIONING 14.4.1 The contractor will take all necessary steps to have equipment that was removed or replaced as part of any Work disposed of or decommissioned in accordance

		with appropriate disposal or decommissioning processes, applicable laws, and in accordance with commercially reasonable environmental practices. 14.4.2 The contractor must submit written proof or evidence or acknowledgement that the disposal of all materials was done in accordance with all current disposal requirements. 14.4.3 Acceptable Documents: Invoices OR disposal certificates from the disposal facility This documentation must be on the disposal facility's letterhead invoice, or certificate. Information Required: • Building name and address • Equipment description (lamps, motors, cooling equipment, etc.) • Equipment quantities • Invoices with model number and quantities separated by light fixture type or model • Disposal facility name 14.4.4 The contractor must submit a completed Retrofit Program Form if the disposal invoices or certificates do not provide enough information to verify the equipments details as reported in the incentive application. 14.4.5 By bidding, the contractor undertakes to provide all the documents necessary for the CECCE to obtain the subsidy related to the improvements. Omission in the providing these details or deliberately not taking precautions to fulfill these documents, (improper disposal, etc.) may result in a claim to the contractor. 14.4.6 List of documents to be submitted to the CECCE project manager at the end of the project: • Final invoices that clearly demonstrate model numbers, quantities, and costs per fixture type.
	14.5	<u>Add</u> new GC 14.5 – USE OF PROJECT MANAGEMENT SOFTWARE as follows: “GC 14.5 PROJECT MANAGEMENT SOFTWARE 14.5.1 The contractor is required to send all correspondence, RFI, CO, invoice, pictures, etc. in pdf format or other original format via email. All software used by the contractor are for the internal use of the contractor only. The owner or consultants will not use the contractor's software for project management and the contractor shall not send any document via a project management software or other software without the approval of the owner and consultants.

APPENDIX 1 to the Supplementary Conditions

Project-specific requirements for a “*Proper Invoice*”

To satisfy the requirements for a *Proper Invoice*, the following criteria, as may be applicable in each case, must be included with the *Contractor's* application for payment:

- .1 the written bill or request for payment must be in writing;
- .2 the *Contractor's* name and current address;

-
- .3 the *Contractor's* HST registration number;
 - .4 the date the application for payment was prepared by the *Contractor*;
 - .5 the period of time in which the services or materials were supplied to the *Owner*;
 - .6 the purchase order number provided by the *Owner*;
 - .7 reference to the provisions of the *Contract* under which payment is being sought (e.g. GC 5.3 –PAYMENTS for progress payments, GC 5.4 – SUBSTANTIAL PERFORMANCE OF THE WORK AND PAYMENT OF HOLDBACK GC 5.5 – FINAL PAYMENT for final payment, etc.);
 - .8 a description, including quantities where appropriate, of the services or materials, or a portion thereof, that were supplied and form the basis of the *Contractor's* request for payment;
 - .9 the amount the *Contractor* is requesting to be paid by the *Owner*, set out in a statement based on the schedule of values approved under GC 5.2.4, separating out any statutory or other holdbacks, set-offs and HST;
 - .10 a sworn Statutory Declaration in the form CCDC 9A-2018, only for second and subsequent progress payments;
 - .11 a current Workplace Safety Insurance Board clearance certificate;
 - .12 a pre-approved schedule of values, supplied by the *Contractor*, for Divisions 1 through 14 of the *Specifications* (or equivalent Construction Specifications Institute Masterformat) of the *Work*, aggregating the total amount of the *Contract Price*, including all supporting invoicing;
 - .13 a separate pre-approved schedule of values, supplied by each *Subcontractor*, for each of Division 15, 16, and 17 of the *Specifications* (or equivalent Construction Specifications Institute Masterformat) of the *Work*, aggregating the total amount of the *Contract Price*, including all supporting invoicing;
 - .14 invoices and other supporting documentation for all claims against the cash allowance;
 - .15 a current, acceptable, and up to date *Construction Schedule Update*;
 - .16 if requested by the *Owner*, a current and valid certificate(s) of insurance as required under GC 11.1 – INSURANCE;
 - .17 the name, title, telephone number and mailing address of the person at the place of business of the *Contractor* to whom payment is to be directed;
 - .18 a current, up to date, and approved *Shop Drawing* log;
 - .19 in the case of the *Contractor's* application for final payment, in addition to the foregoing requirements (as applicable):
 - (a) any *Close-Out Documentation*, together with complete and final as-built drawings;
 - (b) 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;
 - (c) the *Contractor's* written certification that there are no outstanding claims, pending claims or future claims from the *Contractor* or their *Subcontractors* or *Suppliers*; and
 - (d) sufficient evidence of the *Contractor's* compliance with GC 3.11.

REQUEST FOR QUOTATIONS NUMBER: 2025JLC117

School: École élémentaire catholique J.-L. Couroux

ORIGINAL DATE OF ISSUE: July 16, 2026

CLOSING DATE: August 14, 2026 at 14h00,00s

CATEGORY: General Contractor

The undersigned, having proper authority to bind the Proponent irrevocably agrees, if this Quotation is accepted, to supply the services to the Purchaser(s) at the prices offered and in accordance with the terms, conditions and scope of work stated herein and further consents to the disclosure of the successful Offer(s), indicating the name of the Successful Proponent(s), the services selected and the total bid price(s) offered for the services selected.

Firm: _____

Address: _____

Postal Code _____ Tel: () _____ Fax: () _____

Website: _____

Signature: _____ Position: _____
(Responsible Officer)

_____ Date: _____
(Please Print)

The Proponent further acknowledges and agrees that upon acceptance of this or any Quotation Offer by the Purchaser by authorized order in writing including, though not so as to restrict the generality of the foregoing, by purchase order, contract order or release order in writing, the Successful Proponent(s) (if any) shall be bound to perform all services during the period of the Contract in strict accordance with the terms, conditions and scope of work of this Quotation and the aforesaid acceptance order or orders in writing.

1. QUOTATIONS

We/I have examined the site and conditions affecting the Work. I/We have also examined all Contract Documents, including all Addenda thereto which are acknowledged hereinafter. I/We agree, for the following Stipulated Sum, to furnish all necessary labour, materials, plant, equipment, and services for the execution and completion of the Work in accordance with the Contract Documents, including all Addenda thereto, for the construction of:

1.1. Tender Amount excluding HST and separate prices

Tender amount (excluding HST)
\$
(Amount in number)

Tender amount for work in room 134, 134A and 134B (excluding HST)
\$
(Amount in number)

Tender amount to be in Canadian funds, which includes any specified cash allowance(s), inspection charges, legal charges in force at this date. The Tender Amount does not include the cost of the Building Permit Fee nor the separate prices.

I/WE, acknowledge receipt of the following Addenda and have included for the requirements thereof in my/Our Bid Price:

Addendum no.1 dated: _____

Addendum no.2 dated: _____

Addendum no.3 dated: _____

Addendum no.4 dated: _____

Addendum no.5 dated: _____

APPENDICES TO TENDER FORM

The information on List of Tender Documents (Appendix A) as called for in the Tender Documents, is provided in the attached Appendices and forms an integral part of this Tender.

2. PROPONENT'S HST REGISTRATION NUMBER:

3. WORKPLACE SAFETY AND INSURANCE BOARD (WSIB) OF ONTARIO ACCOUNT NUMBER:

4. ACCOUNT REGISTER NUMBER WITH www.wsib.on.ca (LETTERS AND NUMBERS)

5. CONFLICT OF INTEREST

Please indicate whether you believe your firm or any of your subcontractors, employees or agents may be in a potential conflict of interest:

___ No

___ Yes – If yes, please provide details together with your Quotation.

6. DECLARATIONS:

IN SUBMITTING THIS BID, I/We recognize the right of the Owner to accept or reject any Bid submitted, it being understood that revised tenders shall not be called for if minor changes only are contemplated.

I/WE, agree to accept the decision of the Owner if it is found to be in the best interest of the Owner, to cancel any section of this Bid.

I/WE, FURTHER DECLARE that this Bid is made without knowledge, comparison of figures or arrangement with any other company, firm, or person submitting a Bid for the same Work.

I/WE, FURTHER DECLARE that no member or officer of the Owner's organization, will become interested directly or indirectly as a contracting party, partner, surety or otherwise or in the performance of the contract, or in the supplies, work or business to which it relates or in any other portion of profits thereof, or of any such supplies to be used therein, or any other monies to be derived there from.

MY/OUR Bid shall remain open for acceptance and shall be irrevocable for period of sixty (60) days after the Bid closing date.

I/WE agree to assume all increases in labour rates and material prices, taxes, cost indexes, and any other rates that may develop during the life of this Contract.

I/WE are in position to commence Work immediately upon execution of the Contract or upon being in receipt of a Letter of Intent form the Owner authorizing me/us to proceed.

I/WE agree to Substantially Perform the Work with in _____ weeks after receiving notice of Contract award.

I/WE enclose herewith a Bid Bond in an amount of not less than 10% of the amount of this Bid, payable to the Owner.

I/WE FURTHER DECLARE that supplementary information called for in Bid Documents to be submitted with the Bid is provided on the Appendices submitted herewith and forms an integral part of this Bid.

Signed, sealed and submitted for and on behalf of:

Company: _____
(name)

(street address)

(city, province, postal code) (seal)

Signature: _____ (date)

Name and Title: _____
(print or type) (date)

Witness: _____

Appendix A

LIST OF TENDER DOCUMENTS

REQUEST FOR TENDER NUMBER: 2025JLC117

École élémentaire catholique J.-L, Couroux

The following is a list or description of the Tender Documents referred to in the Tender for the above named project.

DRAWING LIST - REFER TO SECTION 00 01 15 : LIST OF DRAWINGS

SPECIFICATION SECTIONS – REFER TO INDEX – SPECIFICATION SECTION 00 01 10

APPENDIX D

COMPLIANCE WITH THE DIRECTIVE TO ENCOURAGE THE PURCHASE OF ONTARIO PRODUCTS

The bidder hereby confirms that it will comply with the requirements and guidelines set forth in Ontario's current procurement directives. To this end, the bidder will, to the extent possible and in accordance with contractual requirements, give preference to subcontractors headquartered in Ontario and to the procurement of materials from suppliers based in Ontario or Canada. The bidder will also prioritize the procurement of materials manufactured in Canada when such materials are available and compatible with the project's requirements.

Date _____

Signature _____

Name and Title _____

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GENERAL INSTRUCTIONS

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1 GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS

- .1 Work of this Contract comprises of Interior Renovations and Building Addition at École élémentaire catholique J.-L.-Couroux located at 10 Findlay Avenue, Carleton Place, ON., K7C 4K1.

1.2 CONTRACT METHOD

- .1 Construct Work under stipulated price contract.

1.3 WORK BY OTHERS

- .1 Co-operate with other Contractors in carrying out their respective works and carry out instructions from the Consultant.
- .2 Co-ordinate work with that of other Contractors. If any part of work under this Contract depends for its proper execution or result upon work of another Contractor, report promptly to Consultant, in writing, any defects which may interfere with proper execution of Work.
- .3 Work of Project executed prior to start of, and during Work of this Contract, and which is specifically excluded from this Contract:
École élémentaire catholique J.-L.-Couroux located at 10 Findlay Avenue, Carleton Place, ON., K7C 4K1.

1.4 FUTURE WORK

- .1 Ensure that Work avoids encroachment into areas required for future work.

1.5 CONTRACTOR USE OF PREMISES

- .1 Limit use of premises for Work, for storage, and for access, to allow:
- .1 Owner occupancy.
 - .2 Work by other contractors.
 - .3 Public usage.
- .2 Co-ordinate use of premises under direction of OCSB Representative.
- .3 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.
- .4 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.
- .5 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work.

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GENERAL INSTRUCTIONS

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- .6 At completion of operations condition of existing work: equal to or better than that which existed before new work started.

1.6 OWNER OCCUPANCY

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

1.7 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

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

1.8 EXISTING SERVICES

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

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1.9 PERMITS, FEES, AND CERTIFICATES

- .1 Obtain all Inspection Certificates required by Authorities having jurisdiction. Hand over copies of Certificates to the Architect.

1.10 DOCUMENTS REQUIRED

- .1 Maintain at job site, one copy of each of the following:
 - .1 Contract drawings, with items of Addenda updates at each location on drawings.
 - .2 Regulatory Authority approved and Drawings, Permits, Certificates, etc.
 - .3 Contract Specification.
 - .4 Reviewed shop drawings.
 - .5 Change Orders and Site Instructions.
 - .6 Other modifications to Contract.
 - .7 Field test reports.
 - .8 Copy of approved work schedule.
 - .9 Manufacturers' installation and application instructions.
 - .10 Record set of As-built Drawings.
 - .11 Minutes of Project Meeting.

1.11 WORK SCHEDULE

- .1 Provided within ten (10) working days after Contract award, construction network diagram showing anticipated progress stages and final completion of work within time period required by Contract Documents. Reference Construction Schedule.
- .2 The Contractor shall include for all regular, double shift and weekend work required to meet completion dates, as advised during the pre-bid project briefing and as scheduled in the Instructions to Bidders.

1.12 COST BREAKDOWN AND CASH FLOW PLAN

- .1 Before submitting first Progress Claim, submit a breakdown of Contract price in detail as directed by the Architect. After approval by the Architect cost breakdown will be used as basis for progress payment.
- .2 The Cash Flow Plan, if requested, will indicate anticipated progress payments. It will be formatted similar to that used by the Contractor for progress payments. The Cash Flow Plan will be updated and submitted to the Architect concurrent with each request for progress payments.

1.13 CONTRACTOR'S USE OF SITE

- .1 Do not unreasonably encumber site with materials or equipment.
- .2 Obtain and pay for use of additional storage or work areas needed for operations

1.14 CODES AND STANDARDS

- .1 Perform work in accordance with Ontario Building Code, and any other code of National, Provincial or local application provided that in any case of conflict or discrepancy, the more stringent requirements shall apply.

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- .2 Meet or exceed requirements of contract documents, specified standards, codes and referenced documents.

1.15 PROJECT MEETINGS

- .1 Hold project meetings at times and locations approved and chaired by Architect. Prepare minutes of all meetings,
- .2 Notify all parties concerned of meetings.
- .3 The recorded minutes will form part of the project record and shall be distributed to all parties within seven (7) days of meeting.

1.16 TELECOMMUNICATIONS

- .1 It is the Contractor's responsibility to co-ordinate and pay for his own telecommunication services.

1.17 GENERAL COMPLIANCE

- .1 Comply with all Canadian Construction Document CCDC 2 General and Supplementary Conditions.
- .2 Specification Division 1 clauses apply to all other Divisions.
- .3 It is the Contractor's responsibility to co-ordinate interdependent trades' activities between Divisions, with special attention to Mechanical and Electrical Divisions.

1.18 LOCATION OF EQUIPMENT AND FIXTURES

- .1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.
- .2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufactures recommendations for safety, access and maintenance.
- .3 Inform the Architect of impending installation and obtain his approval for actual location.
- .4 Submit field drawings to indicate relative position of various services and equipment when required by the Architect.

1.20 CONCEALMENT

- .1 Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas unless specifically noted to be exposed.
- .2 If any doubt arises as to means of concealment, or intent of Contract Documents in this connection, request clarification from Consultant before proceeding with portion of work in question.

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1.21 CUTTING, FITTING AND PATCHING

- .1 Execute cutting (including excavation), and fitting and patching required to make work fit properly.
- .2 Where new work connects with existing and where existing work is altered, cut, patch and make good to match existing work.
- .3 Obtain Architect's approval before cutting, boring or sleeving load-bearing members.
- .4 Make cuts with clean, true, smooth edges. Make patches inconspicuous in final assembly.
- .5 Fit work airtight to pipes, sleeves, ducts and conduits.
- .6 Carefully read all notes on drawings and comply as required.
- .7 At penetration of fire-rated wall, ceiling, or floor construction, completely seal voids with fire rated material, the specified full thickness of construction element.
- .8 Cut rigid materials using power saw or core drill. Pneumatic or impact tools not allowed.

1.22 EXISTING SERVICES

- .1 Where work involves breaking into or connecting to existing services, carry out work at times directed by governing authorities and the Owner, with minimum of disturbance to pedestrians, vehicular traffic and the operation of the existing building.
- .2 Before commencing work, establish location and extent of service lines in area of work and notify the Architect of findings.
- .3 Submit schedule to and obtain approval from governing authorities and the Owner for any shut-down or closure of active service or facility. Adhere to approved schedule and provide notice to affected parties. Provide a minimum five (5) working days' notice of pre-scheduled interface activities affecting utility services or adjacent use of properties.
- .4 Where unknown services are encountered, immediately advise the Architect and confirm findings in writing.
- .5 Record locations of maintained, re-routed and abandoned service lines.

1.23 EXAMINATION OF DRAWINGS, SPECIFICATIONS AND SITE

- .1 The Contractor shall examine all drawings, all sections of the specifications, the site, and existing building for information affecting the work, and project schedule.
- .2 Defects in work prepared by the Contractor or Sub-contractor affecting the work of another contractor shall be reported to the Architect. Failure to report or commencement of further work over the defect shall mean acceptance of the condition. The Contractor shall hold the Owner harmless from costs arising from these defects and their remedies.

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1.24 DIVISION OF WORK

- .1 Work specified in the Specification has been divided into Sections for convenience only. Division of work among Sub-contractors and suppliers is solely the Contractor's responsibility and Consultant assumes no responsibility to act as an arbiter to establish subcontract limits between Sections or Divisions of work.

1.25 COOPERATION

- .1 The Contractor and his Sub-contractors shall be familiar with each other's work wherein it affects their own work.
- .2 The Contractor shall be responsible for the scheduling of materials and the exchange of information between himself and his Sub-contractors for the execution and completion of the work, i.e., shop drawings, progress schedules, articles to be built-in, location of openings.
- .3 By custom or precedent, the Contractor and the Sub-contractors shall make allowances in their work to accommodate each other's work, i.e., cutting, patching, and building in.
- .4 The Contractor shall hold the Owner harmless from costs or damages resulting from failure to cooperate as outlined herein.

1.26 EMERGENCY CALL-OUT PROCEDURES

- .1 The Contractor will provide the Architect and Owner with up-to-date emergency call-out procedures and numbers.

1.27 PARKING

- .1 Parking is available on the school property. To be coordinated with the OCSB Project Manager.

1.28 WASHROOMS

- .1 A washroom facility will be made available to contractors within the building. The General Contractor shall be responsible for cleaning the washroom prior to occupancy.

1.29 MAINTAIN, CO-ORDINATE WITH WASTE AUDIT SECTION

- .1 Except as directed by the Owner or noted on documents, all waste and redundant materials become the property of the Contractor and will be removed all the Contractor's expense from the Owner's property.
- .2 Removed materials will be disposed of in accordance with the latest applicable municipal, provincial, or Federal Government regulations.
- .3 For hazardous waste, the Contractor will provide the Consultant with copies of all completed transportation manifests.

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1.30 ADDITIONAL DRAWINGS

- .1 The Architect may furnish additional drawings to assist proper execution of work. These drawings will be issued for clarification only. Such drawings shall have same meaning and intent as if they were included with plans referred to in Contract Documents.

1.31 WORKMANSHIP

- .1 Workmanship shall be best quality, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Architect if required work is such as to make it impractical to produce required results.
- .2 Do not employ an unfit person or anyone unskilled in their required duties.
- .3 Decisions as to quality or fitness of workmanship in cases of dispute rest solely with Architect, whose decision is final.

1.32 PROTECTION OF BUILDING FINISHES AND EQUIPMENT

- .1 New Construction:
 - .1 Provide protection for finished and partially finished building finishes and equipment during performance of work.
 - .2 Provide necessary screens, covers, hoardings as required.
 - .3 Be responsible for damage incurred due to lack of or improper protection.
- .2 Existing Landscaping and Property:
 - .1 Ensure that no damage is caused to existing structures, pavements, fences, curbs, grounds, plants, property, utilities, services, and finishes designated to remain during the progress of the work. Repair and make good any damage caused at no extra cost to the Owner. Do not proceed with remedial work without written permission of the Architect.
 - .2 Keep municipal access roads clean of mud and debris resulting from construction traffic.
- .3 Prevent soiling of pavement due to spillage, mixing of material or any cause. Make good any damage caused.
- .4 Protect work during periods of suspension, regardless of reason for suspension.

1.33 OWNER'S RIGHT TO DO WORK

- .1 The Owner and contractors directly under contract with the Owner shall have the right to access the work area to conduct work such as but not limited to work in connection with the building's security system, data, intercom system, fire alarm system and cleaning. Include all required provisions to accommodate Owner's work at no added cost to the contract.

END OF SECTION

Section 01 14 10

WORK RESTRICTIONS

2026

1 GENERAL

1.1 ACCESS AND EGRESS

- .1 Design, construct and maintain temporary "access to" and "egress from" work areas, including runways, ramps or ladders and scaffolding, independent of finished surfaces and in accordance with relevant municipal, provincial and other regulations.

1.2 USE OF SITE AND FACILITIES

- .1 Maintain existing services to building and provide for personnel and vehicle access.
- .2 Closures: protect work temporarily until permanent enclosures are completed.

1.3 ALTERATIONS, ADDITONS OR REPAIRS TO EXISTING BUILDING

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

1.4 EXISTING SERVICES

- .1 Notify Owner, and utility companies of intended interruption of services and obtain required permission.
- .2 Where Work involves breaking into or connecting to existing services, give Owner a minimum of 48 hours of notice for necessary interruption of mechanical or electrical service throughout course of work. Keep duration of interruptions minimum. Carry out interruptions after normal working hours of occupants, preferably on weekends.

1.5 SPECIAL REQUIREMENTS

- .1 The school will be occupied during regular school year. Contractor is to provide safe access for students to school at all times. Coordinate with OCSB Project Leader, School Principal and Chief Custodian all issues related to safety on site.

1.6 SECURITY

- .1 Where security has been reduced by Work of Contract, provide temporary means to maintain security. The General Contractor shall provide hording / metal fencing around the exterior work area. All temporary openings shall be securely boarded up with plywood to ensure weather tight seals. The General Contractor shall provide the OCSB Project Manager with a security work plan for approval.

1.7 SCHOOL AND PROPERTY ENVIRONMENT

- .1 Smoking is not permitted on or within the school property. Violators will be asked to be removed from the project.

END OF SECTION

Section 01 33 00

SUBMITTAL PROCEDURES

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1 GENERAL

1.1 RELATED REQUIREMENTS

- .1 Refer to other specs sections for related requirements.

1.2 ADMINISTRATIVE

- .1 Submit to 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 prior to submission to Consultant. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of 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 Consultant, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .7 Verify field measurements and affected adjacent Work are co-ordinated.
- .8 Contractor's responsibility for errors and omissions in submission is not relieved by Consultant's review of submittals.
- .9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Consultant review.
- .10 Keep one reviewed copy of each submission on site.

1.3 SHOP DRAWINGS AND PRODUCT DATA

- .1 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.
- .2 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada.

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- .3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach, or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
- .4 Allow 10 days for Consultant's review of each submission.
- .5 Adjustments made on shop drawings by Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Consultant prior to proceeding with Work.
- .6 Make changes in shop drawings as Consultant may require, consistent with Contract Documents. When resubmitting, notify Consultant in writing of revisions other than those requested.
- .7 Accompany submissions with transmittal letter, in duplicate, containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each shop drawing, product data and sample.
 - .5 Other pertinent data.
- .8 Submissions include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:
 - .1 Subcontractor.
 - .2 Supplier.
 - .3 Manufacturer.
- .9 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
- .10 Details of appropriate portions of Work as applicable:
 - .1 Fabrication.
 - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
 - .3 Setting or erection details.
 - .4 Capacities.
 - .5 Performance characteristics.
 - .6 Standards.
 - .7 Operating weight.
 - .8 Wiring diagrams.
 - .9 Single line and schematic diagrams.
 - .10 Relationship to adjacent work.
- .11 After Consultant's review, distribute copies.
- .12 Submit electronic copies of shop drawings for each requirement requested in specification Sections and as Consultant may reasonably request.
- .13 Submit electronic copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Consultant where shop drawings will not be prepared due to standardized manufacture of product.

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- .14 Submit electronic copies of test reports for requirements requested in specification Sections and as requested by 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.
- .15 Submit electronic copies of certificates for requirements requested in specification Sections and as requested by 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 project contract complete with project name.
- .16 Submit electronic copies of manufacturers instructions for requirements requested in specification Sections and as requested by Consultant.
 - .1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.
- .17 Submit electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Consultant.
 - .1 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .18 Submit six (6) copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Consultant.
- .19 Delete information not applicable to project.
- .20 Supplement standard information to provide details applicable to project.
- .21 If upon review by 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.
- .22 The review of shop drawings by Consultant is for sole purpose of ascertaining conformance with general concept.
 - .1 This review shall not mean that Consultant approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.

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SUBMITTAL PROCEDURES

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- .2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

1.4 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 Consultant's business address.
- .3 Notify 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 Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Consultant prior to proceeding with Work.
- .6 Make changes in samples which 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.

1.5 MOCK-UPS

- .1 Prepare mock-ups for Work specifically requested in specifications. Include for Work of Sections required to provide mock-ups.
- .2 Construct in locations acceptable to Consultant.
- .3 Prepare mock-ups for Consultant's review with reasonable promptness and in orderly sequence, to not cause delays in Work.
- .4 Failure to prepare mock-ups 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.
- .5 If requested, Consultant will assist in preparing schedule fixing dates for preparation.
- .6 Mock-ups may remain as part of Work.

1.6 PHOTOGRAPHIC DOCUMENTATION

- .1 Submit electronic copy of colour digital photography in jpg format, standard resolution as directed by Consultant.
- .2 Project identification: name and number of project and date of exposure indicated.
- .3 Number of viewpoints: 2 locations.

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- .1 Viewpoints and their location as determined by Consultant.

1.7 CERTIFICATES AND TRANSCRIPTS

- .1 Immediately after award of Contract, submit Workers' Compensation Board status.
- .2 Submit transcription of insurance immediately after award of Contract.

2. PRODUCTS

2.1 NOT USED

- .1 Not used.

3. EXECUTION

3.1 NOT USED

- .1 Not used.

END OF SECTION

Section 01 74 11

CLEANING

2026

1 GENERAL

1.1 PROJECT CLEANLINESS

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, including that caused by Owner or other Contractors.
- .2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Consultant. Do not burn waste materials on site, unless approved by Consultant.
- .3 Clear snow and ice from access to building, bank/pile snow in designated areas only.
- .4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .5 Provide on-site containers for collection of waste materials and debris.
- .6 Provide and use marked separate bins for recycling.
- .7 Dispose of waste materials and debris at designated dumping areas on Crown property.
- .8 Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.
- .9 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .10 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- .11 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .12 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

1.3 FINAL CLEANING

- .1 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .2 Remove waste products and debris other than that caused by others, leave Work clean and suitable for occupancy.
- .3 Prior to final review remove surplus products, tools, construction machinery and equipment.
- .4 Remove waste products and debris including that caused by Owner or other Contractors.
- .5 Remove waste materials from site at regularly scheduled times or dispose of as directed by Consultant. Do not burn waste materials on site, unless approved by Consultant.
- .6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

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CLEANING

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- .7 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.
- .8 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, floors.
- .9 Clean lighting reflectors, lenses, and other lighting surfaces.
- .10 Vacuum clean and dust building interiors, behind grilles, louvres and screens.
- .11 Clean or prepare floor finishes, as recommended by manufacturer.
- .12 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
- .13 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.
- .14 Remove dirt and other disfiguration from exterior surfaces.
- .15 Clean and sweep roofs, gutters, areaways, and sunken wells.
- .16 Sweep and wash clean paved areas.
- .17 Clean equipment and fixtures to sanitary condition; clean or replace filters of mechanical equipment.
- .18 Clean roofs, downspouts, and drainage systems.
- .19 Remove debris and surplus materials from crawl areas and other accessible concealed spaces.

2. PRODUCTS

2.1 NOT USED

- .1 Not used.

3. EXECUTION

3.1 NOT USED

- .1 Not used.

END OF SECTION

Section 02 41 99

DEMOLITION FOR MINOR WORKS

2026

1 GENERAL

1.1 RELATED REQUIREMENTS

- .1 Refer to other specs sections for related requirements.

1.2 REFERENCES

- .1 CSA International
 - .1 CSA S350-M1980(R2003), Code of Practice for Safety in Demolition of Structures.
- .2 National Research Council Canada (NRC)
 - .1 National Building Code of Canada (NBC).
 - .2 Ontario Building Code (OBC).
 - .2 National Fire Code of Canada (NFC).
- .3 U.S. Environmental Protection Agency (EPA)/Office of Water
 - .1 EPA 832/R-92-005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

1.3 SITE CONDITIONS

- .1 If material resembling spray or trowel-applied asbestos or other designated substance listed as hazardous be encountered, stop work, take preventative measures, and notify Project Manager immediately.
 - .1 Proceed only after receipt of written instructions have been received from Consultant.
- .2 Notify Project Manager before disrupting building access or services.

2. PRODUCTS

2.1 NOT USED

- .1 Not used.

3. EXECUTION

3.1 EXAMINATION

- .1 Inspect site with Consultant and verify extent and location of items designated for removal, disposal, alternative disposal, recycling, salvage and items to remain.
- .2 Locate and protect utilities. Preserve active utilities traversing site in operating condition.
- .3 Notify and obtain approval of utility companies before starting demolition.
- .4 Disconnect, cap, plug or divert, as required, existing public utilities within the property where they interfere with the execution of the work, in conformity with the requirements of the authorities having jurisdiction. Mark the location of these and previously capped or plugged services on the site and indicate location (horizontal and vertical) on the record drawings. Support, shore up and maintain pipes and conduits encountered.
 - .1 Immediately notify Consultant and utility company concerned in case of damage to any utility or service, designated to remain in place.
 - .2 Immediately notify the Consultant should uncharted utility or service be encountered, and await instruction in writing regarding remedial action.

Section 02 41 99

DEMOLITION FOR MINOR WORKS

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3.2 PREPARATION

- .1 Protection of In-Place Conditions:
 - .1 Prevent movement, settlement, or damage to adjacent structures, utilities, and landscaping features and parts of building to remain in place. Provide bracing and shoring required.
 - .2 Keep noise, dust, and inconvenience to occupants to minimum.
 - .3 Protect building systems, services and equipment.
 - .4 Provide temporary dust screens, covers, railings, supports and other protection as required.
- .2 Demolition/Removal:
 - .1 Remove items as indicated.
 - .2 Removal of Pavements, Curbs and Gutters:
 - .1 Square up adjacent surfaces to remain in place by saw cutting or other method approved by Consultant.
 - .2 Protect adjacent joints and load transfer devices.
 - .3 Protect underlying and adjacent granular materials.
 - .3 Remove parts of existing building to permit new construction.
 - .4 Trim edges of partially demolished building elements to tolerances as defined by Consultant to suit future use.

3.3 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .3 Refer to demolition drawings and specifications for items to be salvaged for reuse.

END OF SECTION

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Part 1 General

1.1 SUMMARY

- .1 Section Includes
 - .1 Labour, Products, equipment, and services necessary to complete the work of this Section.
- .2 Related Requirements
 - .1 Section 03 20 00 - Concrete Reinforcing.
 - .2 Section 03 30 00 - Cast-In-Place Concrete.

1.2 REFERENCES

- .1 Reference standards: Perform the work of this Section in conformance with the requirements of the following standards:
 - .1 American Concrete Institute (ACI)
 - .1 ACI 302.1-15 Guide for Concrete Floor and Slab Construction.
 - .2 ACI 117-10 Specification for Tolerances for Concrete Construction and Materials and Commentary.
 - .3 ACI PRC-347-14 Guide to Formwork for Concrete.
 - .2 American Society for Testing and Materials (ASTM)
 - .1 ASTM D1751 – 18, Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
 - .2 ASTM D1752 – 18, Standard Specification for Preformed Sponge Rubber, Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction.
 - .3 Canadian Standards Association (CSA)
 - .1 CSA A23.1-14, Concrete Materials and Methods of Concrete Construction.
 - .2 CSA A23.2:19, Methods of Test for Concrete.
 - .3 CSA O86-14, Engineering Design in Wood.
 - .4 CSA O121-08, Douglas Fir Plywood.
 - .5 CSA O151-09, Canadian Softwood Plywood.
 - .6 CSA O153:13, Poplar Plywood.
 - .7 CSA O437 Series-93 (R2011), Standards for OSB and Waferboard.
 - .8 CSA-S136-16, North American Specification for the design of Cold-Formed Steel Structural Members.
 - .9 CSA S157-17/S157.1-17 Strength Design in Aluminum and Commentary.
 - .10 CSA S269.1-16 (R2021), Falsework and Formwork.
 - .11 CSA S413-14 (R2019), Parking Structures.

1.3 DESIGN OF FORMWORK, FALSEWORK, AND RESHORING

- .1 Conform to the referenced Standards.
- .2 Design formwork and reshoring to safely support vertical and lateral loads until they can be supported by the structure. Design formwork for loads and lateral pressures recommended in CSA S269.1.
- .3 Design and provide shoring and bracing to excavations and underpinning to safely withstand any lateral pressures to which they may be subjected.
- .4 Design forms for post-tensioned members so that the unrestrained shrinkage and elastic shortening of the concrete can take place.
- .5 See drawings for locations where reinforced concrete members are not structurally stable until walls and slabs intersecting with them have been constructed to the specified level and the concrete has reached at least 75% of the specified strength.
 - .1 Design shores for these slabs and walls to safely support the total vertical and lateral loads until the walls and slabs are complete and have reached 75% of their specified 28 day strength. Design the shores so that they can be unloaded gradually.
- .6 The Contractor shall assume full responsibility for the structural adequacy of the forms to withstand all concrete, environmental, and construction loads.

1.4 SUBMITTALS

- .1 Submit all submittals, including shop drawings, in accordance with Division 01.
- .2 Assume full responsibility for complete design and engineering of formwork including shoring and bracing to resist loads due to wet concrete, forms, wind and other forces arising from use of equipment to place concrete.
- .3 Shop Drawings
 - .1 Indicate method and schedule of construction, shoring, stripping and re-shoring procedures, materials, arrangement of joints, camber, special architectural exposed finishes, ties, liners, water stops, dovetail anchor slots, and locations of temporary embedded parts. Show size of tie hole, plastic plug, and plug recess. Comply with CSA S269.1, for falsework drawings Comply with CSA S269.3 for formwork drawings.
 - .2 Indicate formwork design data, such as permissible rate of concrete placement, and temperature of concrete, in forms.
 - .3 Indicate sequence of erection and removal of formwork/falsework.
 - .4 Each shop drawing submission shall bear stamp and signature of qualified professional engineer registered or licensed in the Province of Ontario, Canada and experienced in the work of this Section.
 - .5 Opening information
 - .1 Submit drawings of the structure showing formed holes, recesses and sleeving required under all Sections.

1.5 QUALITY ASSURANCE

- .1 Licensed Professionals:
 - .1 Engage a Professional Engineer licensed in the Province of Ontario and experienced in design and installation of the Work of this Section to:
 - .1 Prepare or directly supervise the design, execution, operations, procedures, and preparation of shop drawings.
 - .2 Check all drawings and calculations.
 - .3 Certify that checks have been made by sealing and signing shop drawings and calculations.
 - .4 Review the erection of the Work.

1.6 COOPERATION WITH OTHER TRADES

- .1 Set all bolts, inserts, anchors, hangers and other means of fasteners required to be installed for other trades.
- .2 Provide holes through concrete work required by other trades for pipes, ducts, conduits and other items of equipment. Obtain Consultants approval for location of holes not shown on the structural drawings.

1.7 DELIVERY, STORAGE AND HANDLING

- .1 Deliver and handle formwork materials to prevent weathering, warping, and damage detrimental to strength of materials or surfaces to be formed.
- .2 Store materials on site in a manner to prevent damage thereto. Protect from weather.
- .3 Comply with CSA A23.1, Clause 5.
- .4 Protect work of this Section from damage. Protect other work from damage resulting from this work. Replace damaged work which cannot be satisfactorily repaired.

Part 2 Products

2.1 MATERIALS

- .1 Formwork materials
 - .1 For concrete without special architectural features, use wood and wood product formwork materials to CSA O121 and CSA O86.1.
 - .2 Exposed surfaces - metal, plywood or plywood lined. Plywood to conform to the material Standard for the relevant material as listed in 1.2.1.
 - .3 Unexposed surfaces - metal, plywood, or wood lumber to conform to the material Standard for the relevant material as listed in 1.2.1.
 - .4 Plywood and wood formwork materials shall conform to the material Standard for the relevant material as listed in 1.2.1., be free from warp and sawn straight so that lines and shapes will be accurately retained.
 - .5 Un-lined forms for unexposed surfaces shall be made with a good grade of lumber or plywood and fitted so that there will be no leakage.

- .6 Use metal forms, plywood lined forms or plywood forms of sufficient structural strength for exposed surfaces. Plywood for lining shall be GIS exterior grade fir plywood with waterproof glue.
- .7 Proprietary and/or modular forming systems shall be designed such that they do not interfere with the specified placement of reinforcement or other embedded hardware and must be reviewed by the Consultant.
- .2 Form ties:
 - .1 For concrete not designated 'Architectural concrete', use removable or snap-off metal ties, fixed or adjustable length, free of devices leaving holes larger than 25 mm (1") dia. in concrete surface.
- .3 Form liner
 - .1 Plywood: Douglas Fir to CSA O121 T and G.
- .4 Form release agent: non-staining, chemically active release agent containing compounds that react with free lime present in concrete to provide water insoluble soaps, preventing set of film of concrete in contact with form.
 - .1 For temperatures less than 0oC: Formshield G, by Euclid Chemical. For formed concrete work in contact with soil, use material that does not alter sulphate resistant qualities of concrete.
 - .2 For temperatures greater than 0oC: Water Based Formwork Release Agent. Formshield WB, by Euclid Chemical.
- .5 Form stripping agent: colourless mineral oil, non-toxic, biodegradable, low VOC, free of kerosene, with viscosity between 0.75 mm to 1.00 mm (0.03 to 0.04 in) at 40°C, flashpoint minimum 150°C, open cup.
- .6 Chamfers: 25 mm x 25 mm (1" x 1") wood, smooth, with no open defects.
- .7 Falsework materials: to CSA-S269.1.
- .8 Sealant: to Division 07.
- .9 Waterstops
 - .1 PVC waterstop to CGSB 41-GP-35M, types II and III:
 - .1 Construction joints, external waterstop
 - .1 240 mm (9.5") wide by 4.5 mm (0.18") thick.
 - .2 Construction joints, internal ribbed waterstop with centre bulb:
 - .1 150 mm (6") wide; tapered thickness varying from 9.5 mm (3/8") near centre to 6.4 mm (1/4") near edge, with 7.9 mm (5/16") inside diameter centre bulb.
 - .3 Expansion joints, internal ribbed waterstop with centre bulb:
 - .1 229 mm (9") wide; tapered thickness varying from 9.5 mm (3/8") near centre, to 6.4 mm (1/4") near edge, with 20 mm (3/4") inside diameter centre bulb.

- .2 Hydrophillic waterstop
 - .1 Non-moving contraction and construction joints
 - .1 Sika Hydrotite CJ hydrophilic rubber waterstop by Sika.
- .10 Expansion Joint Filler and Isolation Joint Filler:
 - .1 Bituminous Type:
 - .1 Premoulded, resilient, non-extruding, asphalt impregnated fibre, to ASTM D1751.
 - .2 Non-Bituminous Type:
 - .1 Premoulded, resilient, non-extruding, to ASTM 1752, and compatible with polysulphide urethane, polyepoxide urethane, or neoprene sealants, as applicable.
- .11 Control (Saw-Cut) Joint Filler:
 - .1 Two component, semi rigid, polyurea control joint filler, Sika Loadflex-524 EZ by Sika.
- .12 Dovetail Anchors and Slots: Minimum 24 ga overall thickness zinc coating Z275 galvanized steel dovetail anchor slots with fillers to prevent entry of concrete during placing and minimum 14 ga overall thickness. Zinc coating Z275 galvanized steel dovetail anchors. Anchors shall project to within 20 mm (3/4") of masonry face.
- .13 Mechanical Fasteners: Galvanized steel screw and washer with screw of length to secure insulation to formwork without penetrating concrete finish surface.
- .14 Formwork Insulation: Extruded, expanded polystyrene, CAN/ULC-S701, Type 4, minimum RSI (R) value of 5.0 per 25 mm (1"), compressive strength 0.2 MPa (30 psi), thickness as indicated on Drawings.
- .15 Voidform:
 - .1 Honey comb cellular core structure manufactured from recycled corrugated kraft papers.
 - .1 CaraCor carton forms by VoidForm, Winnipeg, Manitoba.

Part 3 Execution

3.1 VERIFICATION OF CONDITIONS

- .1 Before proceeding with any work in or adjacent to the existing structure, verify that conditions are as indicated on the drawings. If they are not, do not proceed until Consultant has given instructions.

3.2 ERECTION

- .1 Verify lines, levels and column centres before proceeding with formwork and falsework and ensure dimensions agree with drawings. Verify the locations of all inserts, anchor rods, cast-ins, etc. with structural, architectural, mechanical, electrical, and shop drawings prior to proceeding with formwork and falsework. Report any discrepancies to Consultant immediately.

- .2 Construct forms to produce plumb and level concrete and true to linear building lines. Maximum variations (not accumulative) as follows:
 - .1 Variation from plumb in concrete surfaces not to exceed 6 mm (1/4") in 3 m (10') nor 10 mm (3/8") in 6 m (20') or more.
 - .2 Variation from level or grade indicated on Drawings for tops of walls not to exceed 6 mm (1/4") in 3 m (10') nor 10 mm (3/8") in 6 mm (20') in building length.
 - .3 Variation of linear building lines from established position in plan and related positions of walls not to exceed 6 mm (1/4") in 3 m (10'), 10 mm (3/8") in 1 bay nor 25 mm (1") in building length.
 - .4 Variation of concrete slabs and toppings from dead level or slopes as indicated on Drawings not to exceed 4 mm (1/8") in 3 m (10').
- .3 Obtain Consultant's approval for use of earth forms framing openings not indicated on drawings.
- .4 Hand trim sides and bottoms and remove loose earth from earth forms before placing concrete.
- .5 Fabricate and erect falsework in accordance with CSA S269.1.
- .6 Fabricate and erect formwork in accordance with CSA S269.3.
- .7 Do not place shores and mud sills on frozen ground.
- .8 Provide site drainage to prevent washout of soil supporting mud sills and shores.
- .9 Fabricate and erect formwork in accordance with CSA S269.3 to produce finished concrete conforming to shape, dimensions, locations and levels indicated within tolerances required by CSA A23.1.
- .10 Align form joints and make watertight. Keep form joints to minimum.
- .11 Locate horizontal form joints for exposed columns 2,400 mm (8'-0") above finished floor elevation.
- .12 Use 25 mm (1") chamfer strips on external corners and/or 25 mm (1") fillets at interior corners, joints, unless specified otherwise.
- .13 Form chases, slots, openings, drips, recesses, expansion and control joints as indicated.
- .14 Build in anchors, sleeves, ties, bolts, nailers, templates, shelf angles and other inserts required to accommodate Work specified in other sections. Assure that all anchors and inserts will not protrude beyond surfaces designated to receive applied finishes, including painting.
- .15 Clean formwork in accordance with CSA A23.1, before placing concrete.
- .16 If slip forming and flying forms are used, submit details of equipment and procedures for Consultant's approval.

- .17 Use full size contact form sheeting panels wherever possible. Install contact surfaces of formwork to produce neat and symmetrical joint patterns. Ensure joints are vertical or horizontal and, where possible, stagger to maintain structural continuity. Back vertical joints solidly and nail edges of abutting sheets to same stud. Likewise solidly back horizontal joints. Ensure adjacent form panels fit accurately, tight and flush. Use straightest available lumber.
- .18 Align forms to ensure no visible defects appear on finished work.
- .19 Locate wall form ties in accordance with reviewed shop drawings; align on a particular member both vertically and horizontally. Arrange reuse of form so tie holes are also reused. Tighten form ties, particularly at corners.
- .20 Form slab soffits using full size panels where possible. Keep number of smaller size panels to minimum.
- .21 Take particular care in forming corners and openings. Ensure formwork is tight and braced so no movement occurs.
- .22 Use templates to secure and align anchor rods in formwork prior to placement of the concrete. Report any interference with reinforcing or other inserts to Consultant prior to the placement of the concrete. Concrete should not be placed until interference issues are resolved in writing by the Consultant.
- .23 For walls and shear walls, leave one side of form open for review of reinforcing steel. Close form only after Consultant has reviewed bar placement.
- .24 Forms for exposed concrete are to be laid out so that joints are kept to a minimum and located in an orderly and symmetrical arrangement wherever possible. Form ties shall be evenly spaced and located in straight horizontal and vertical lines. Spacing and location of form tie holes shall be detailed by the Contractor and approved by the Consultant. See also the architectural drawings and specifications for any special requirements for architectural, or exposed, concrete.
- .25 The strength and rigidity of forms shall be such that they will not leak or result in visible irregularities in the finished concrete. In addition the deflection of facing materials between studs, as well as the deflection of studs and walers, shall not exceed 0.0025 times the span.
- .26 Forms shall be so constructed that the finished concrete will conform to the shape, dimensions and tolerances as specified in CSA A23.1, CSA S269.1, CSA S269.3 or on the structural drawing, whichever is most rigorous. They shall also incorporate the cambers specified on the structural drawings. Movement resulting from form support deflection, closure of form joints, and elastic shortening of forms and shoring, must be calculated and added to the cambers indicated on the drawings.
- .27 Construct forms so that they may be dismantled and removed without damaging the concrete.
- .28 Set shores on wedges or use adjustable shores so they may be removed without causing undue strains in the concrete.
- .29 Do not exceed the safe capacity of the structure with any construction or shoring loads. Shoring Engineer to review loading on structure during construction.

3.3 REMOVAL AND RESHORING

- .1 Leave formwork in place for following minimum periods of time after placing concrete. Proposed removal times to be approved by Consultant in writing prior to work. Contractor required to submit shop drawings/scheduling of proposed stripping time for all elements. Multi-storey slab construction to outline reshoring scheduling and methodology. As a minimum conform to requirements of CSA S269. All information to be stamped and certified by formwork Engineer.
 - .1 3 days for walls and sides of beams.
 - .2 3 days for columns.
 - .3 28 days for beam soffits, slabs, decks and other structural members or
 - .4 3 days when replaced immediately with adequate shoring to standard specified for falsework, and when concrete has reached at least 75% of specified 28 day strength.
 - .5 Maintain reshoring or formwork in place for a minimum of 28 days or for such longer time as may be required to ensure that the concrete has reached its specified 28 day strength.
 - .6 3 days for footings and abutments.
 - .7 Reshores in the lower storeys shall be capable of safely carrying the full weight of the concrete and formwork posted to them prior to the removal of the first storey of shores supported by the ground or slab on grade.
 - .8 After reshores are removed from the first storey, the design and provision of reshores may be based on the assumption that each shored or reshored flexural member shares load in relation to its achieved strength, provided the flexural member has attained at least 75% of its specified 28 day strength.
 - .9 Install reshores so that they are supported on members which can safely support the reshore load.
 - .10 As a guide, under specified curing conditions, 75% of the 28 day strength should be attained 7 days after concreting in normal weather and 14 days after concreting in "Cold Weather".
 - .11 Stripping and reshoring shall proceed simultaneously so as not to leave an area greater than 80 sq.m. unsupported by either formwork or reshoring at any instant. Install reshores tight to construction above and below so that they will not significantly shorten under load, but take care not to preload the construction below or raise the construction above by over-tightening.
 - .12 Do not strip within one and a half bays of a construction joint until new concrete beyond the construction joint has reached 75% of its specified 28 day strength.
- .2 Forms shall not be removed until concrete has attained sufficient strength that no damage to strength or continuity of concrete will occur when forms are removed. Time for formwork removal of suspended concrete shall be approved by the Consultant. See also the requirements of Section 3.3.
 - .1 Prying against face of concrete to remove forms is not allowed, only wooden wedges shall be used.
 - .2 Where forms are being reused, thoroughly clean and retreat them.

- .3 Removal of form ties shall be done carefully to avoid marking concrete and to allow for patching. Grout bottom of form tie hole to prevent rust staining.
- .4 Provide all necessary reshoring of members where members may be subjected to additional loads during construction as required.
- .3 Space reshoring in each principal direction at not more than 3,000 mm (10'-0") apart.
- .4 Re-use formwork and falsework subject to requirements of CSA A23.1.
- .5 Strip fibre forms off architectural concrete 2 days after placing, using power operated saw. To strip form, set power saw blade slightly less than thickness of the form, make 2 vertical cuts and remove form. Then, using broad bladed tool, carefully pry form off with short strokes by pushing handle toward column. Exercise care so not to mar concrete surface. After stripping, replace form halves on column and wire in place to protect column during construction. Leave around columns until after scaffolding and other formwork have been removed at end of construction to ensure column protection.
- .6 Be responsible for safety of structure, both before and after removal of forms until concrete has reached its specified 28 Day compressive strength.
- .7 Take particular care when removing forms to ensure no damage occurs at corners, arises and the like.
- .8 To help avoid colour variations in architectural concrete, ensure length of time between concrete placing and form removal is approximately same for each portion of work.
- .9 In hot weather, wood forms remaining in place should not be considered adequate for curing but should be removed or loosened so concrete surfaces may be kept moist or coated with curing agent.
- .10 In cold weather, defer removal of formwork or insulate formwork, to avoid thermal shock and consequent cracking of concrete surface.
- .11 Install tie hole plugs immediately following removal of spreader cones. Install to a snug fit, maximum setback from concrete surface as specified.
- .12 When concrete is dry, install temporary polyethylene rope in reglets to prevent contamination of same.

3.4 CONSTRUCTION JOINTS

- .1 Form construction joints where required and where indicated. Construction joints shall conform to CSA A23.1. Construction joint locations to be approved by Consultant in writing prior to performance of work.
- .2 Form 38 x 89 (2" x 4") beveled shear keys full length on construction joints, unless detailed otherwise.

3.5 NON-CONFORMING WORK

- .1 Movement and displacement of formwork during construction, variations in excess of specified tolerances and marked and disfigured surfaces that cannot be repaired by approved methods will be considered defective work performed by this Section.

- .2 Reconstruct defective formwork and replace concrete and reinforcement placed in defective formwork at no additional cost to Owner.

END OF SECTION

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Part 1 General

1.1 SUMMARY

- .1 Section Includes
 - .1 Labour, Products, equipment, and services necessary to complete the work of this Section.
- .2 Related Sections
 - .1 Section 03 10 00 – Concrete Forming and Accessories
 - .2 Section 03 30 00 – Cast-in-Place Concrete

1.2 REFERENCES

- .1 Reference standards: Perform the work of this Section in conformance with the requirements of the following standards:
 - .1 American Society for Testing and Materials (ASTM)
 - .1 ASTM A184/A184M-19, Standard Specification for Welded Deformed Steel Bar Mats for Concrete Reinforcement
 - .2 ASTM A775/A775M-19, Specification for Epoxy-Coated Steel Reinforcing Bars.
 - .3 ASTM A1064/A1064M-22, Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
 - .2 Canadian Standards Association (CSA)
 - .1 CSA A23.1-14, Concrete Materials and Methods of Concrete Construction.
 - .2 CSA A23.3-14, Design of Concrete Structures.
 - .3 CSA G30.18-09, Carbon Steel Bars for Concrete Reinforcement.
 - .4 CSA G40.21-13 (R2018), Structural Quality Steel.
 - .5 CSA G164-M92, Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .6 CSA W186:21, Welding of Reinforcing Bars in Reinforced Concrete Construction.
 - .7 CSA S413-14 (R2019), Parking Structures.
 - .3 Reinforcing Steel Institute of Canada
 - .1 RSIC Manual of Standard Practice 2020.

1.3 SUBMITTALS

- .1 Submit all submittals, including shop drawings and placing of reinforcement in accordance with Division 01.

.2 Shop Drawings

- .1 Shop drawings shall be prepared by a detailing firm which has been in operation a minimum of four years. All drawings and bar lists prepared under this section shall be checked and initialled by the Checker of the firm producing the drawings before submission to the Consultant.
 - .2 Indicate on shop drawings: bar bending details, lists, quantities of reinforcement, sizes, spacings, locations of reinforcement and mechanical splices if approved by Consultant, with identifying code marks to permit correct placement without reference to structural drawings. Indicate sizes, spacings and locations of chairs, spacers and hangers. Prepare reinforcement drawings in accordance with Reinforcing Steel Manual of Standard Practice - by Reinforcing Steel Institute of Canada.
 - .3 Detail lap lengths and bar development lengths to CSA A23.3, unless otherwise indicated. Provide type B tension lap splices unless otherwise indicated.
 - .4 Show walls (foundation/retaining/shearwall/corewall) in full elevation and indicate bar size, spacing, laps, bends, etc.
 - .5 Show beams in full elevation and indicate bar size, spacing, laps, bends, etc. Beam reference labels to be used on shop drawings.
 - .6 Show columns in full elevation and indicate bar size, spacing, laps, bends, etc.
 - .7 Show slab reinforcing full length on drawings. Slab drawings to be provided as noted on separate sheets:
 - .1 Top Layer Reinforcing
 - .2 Bottom Layer Reinforcing
 - .3 Secondary Reinforcing (i.e. additional dowels/ties/bars at inserts/integrity steel)
 - .4 Slab Band Layer Reinforcing
 - .8 Detail placement of reinforcing where special conditions occur.
- .3 Source quality control submittals
- .1 Submit certified copy of mill test report of reinforcing steel, showing physical and chemical analysis, minimum 4 weeks prior to commencing reinforcing work.
 - .2 Inform Consultant of proposed source of material to be supplied.

1.4 DELIVERY, STORAGE & HANDLING

- .1 Store materials on site in a manner to prevent damage thereto. Protect from weather. Comply with CSA A23.1, Clause 5.
- .2 Protect work of this Section from damage. Protect other work from damage resulting from this work. Replace damaged work which cannot be satisfactorily repaired.

1.5 UNIT PRICES

- .1 Unit prices requested as part of Tender shall include detailing, materials, bending, placing and cleaning.

1.6 MEASUREMENT PROCEDURES

- .1 Reinforcing steel will be measured in pounds of steel incorporated into work, computed from theoretical unit mass specified in CSA G30.18 for lengths and sizes of bars as indicated or authorized in writing by Consultant.
- .2 No measurement will be made under this section. Include costs in items of concrete work for which reinforcement is required.

Part 2 Products

2.1 MATERIALS

- .1 Reinforcing steel: billet steel, grade 400, deformed bars to CSA G30.18, unless indicated otherwise.
- .2 Welded steel wire fabric: to ASTM A1064/A1064M. Provide in flat sheets only.
- .3 Epoxy coating of non-prestressed reinforcement: to ASTM A 775/A 775M.
- .4 Chairs, bolsters, bar supports, spacers: to CSA A23.1. To be adequate for strength and support of reinforcing construction required. Use chairs with plastic coated feet where slab and beam soffits will be exposed.
- .5 Plain round bars: to CSA G40.21.
- .6 Substitute different size bars only if permitted in writing by Consultant.

2.2 FABRICATION

- .1 Fabricate reinforcing steel in accordance with CSA A23.1, ACI PRC-315, and Reinforcing Steel Manual of Standard Practice by the Reinforcing Steel Institute of Canada, unless indicated otherwise.
- .2 Obtain Consultant's approval for locations of reinforcement splices other than those shown on placing drawings.
- .3 Upon approval of Consultant, weld reinforcement in accordance with CSA W186.
- .4 Ship bundles of bar reinforcement, clearly identified in accordance with bar bending details and lists.

Part 3 Execution

3.1 FIELD BENDING

- .1 Do not field bend or field weld reinforcement except where indicated or authorized by Consultant.
- .2 When field bending is authorized, bend without heat, applying a slow and steady pressure.
- .3 Replace bars which develop cracks or splits at no additional cost.

3.2 PLACING REINFORCEMENT

- .1 Place reinforcement in accordance with reviewed shop drawings and in accordance with CSA A23.1. Support with chairs, bolsters, bar supports or spacers in as close spacing as possible to prevent displacement of reinforcement from intended bar position, before and during placing of concrete. Pieces of block, wood, and/or similar items, are not acceptable as chairs and spacers.
 - .1 Maximum chair spacing:
 - .1 10M - 600 mm (24")
 - .2 15M - 1,200 mm (48")
 - .3 20M - 1,600 mm (64")
 - .4 25M - 1,900 mm (78")
- .2 Clean reinforcing before placing concrete.
- .3 Use plain round bars as slip dowels in concrete. Paint portion of dowel intended to move within hardened concrete with one coat of asphalt paint. When paint is dry, apply a thick even film of mineral lubricating grease.
- .4 Prior to placing concrete, obtain Consultant's review of reinforcing material and placement. Provide minimum 24 hours notice prior to concrete placement for review.
- .5 Ensure cover to reinforcement is maintained during concrete pour.
- .6 Lap wire mesh sections at least 6" and wire tighter securely; discontinue wire mesh at joints.
- .7 Ensure welded wire fabric is lifted to centre of slab (or where indicated) during concrete placing.
- .8 At control joints in walls, unless otherwise noted, cut or stop alternate horizontal reinforcing bars at the joints.
- .9 Unless otherwise detailed on the structural drawings, reinforcement shall be continuous through construction joints.
- .10 Provide reinforcement as specified under Masonry Division.
- .11 Provide reinforcement as specified under Electrical Division.
- .12 Provide reinforcement as specified under Mechanical Division.

3.3 ADJUSTING AND CLEANING

- .1 Adjust and secure reinforcement in correct position immediately before concrete is placed.
- .2 Provide a rodman during the entire duration of concrete placement to make last minute adjustments.
- .3 Remove contaminants which lessen bond between concrete and reinforcement.

3.4 FIELD QUALITY CONTROL

- .1 Independent inspection and testing company may be appointed and paid for by Owner to conduct mill tests – physical and chemical analysis of reinforcing steel supplied. Refer to Division 01.
- .2 Cooperate with and assist inspection and testing company's personnel during inspection and tests.
- .3 Remove defective materials and complete work which fails tests and replace as instructed.

END OF SECTION

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- 3.20 NON-CONFORMING WORK

Part 1 General

1.1 SUMMARY

- .1 Section Includes
 - .1 Labour, Products, equipment, and services necessary to complete the work of this Section.
- .2 Related Requirements
 - .1 Section 03 10 00 - Concrete Formwork and Accessories.
 - .2 Section 03 20 00 - Concrete Reinforcing.
 - .3 Section 05 12 23 - Structural Steel for Buildings.

1.2 REFERENCES

- .1 Reference standards: Perform the work of this Section in conformance with the requirements of the following standards:
 - .1 American Concrete Institute (ACI)
 - .1 ACI 117-10, Standard Specifications for Tolerances for Concrete Construction and Materials.
 - .2 American Society for Testing and Materials (ASTM)
 - .1 ASTM C109/C109M-21, Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2 in. or 50-mm Cube Specimens).
 - .2 ASTM C260/C260M-10a(2016), Specification for Air-Entraining Admixtures for Concrete.
 - .3 ASTM C309-19, Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
 - .4 ASTM C494/C494M-13, Specification for Chemical Admixtures for Concrete.
 - .5 ASTM C827/C827M-16, Test Method for Change in Height at Early Ages of Cylindrical Specimens from Cementitious Mixtures.
 - .6 ASTM C939/C939M-22, Test Method for Flow of Grout for Preplaced-Aggregate Concrete (Flow Cone Method).
 - .7 ASTM D412-16(2021), Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers-Tension.
 - .8 ASTM D624-00(2020), Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomer.
 - .9 ASTM D1751-18, Specification for Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
 - .10 ASTM D1752-18, Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.
 - .11 ASTM E1155M-14, Standard Test Method for Determining FF Floor Flatness and FL Floor Levelness Numbers (Metric).

- .12 ASTM E1745-17, Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.
- .3 Canadian Standards Association (CSA)
 - .1 CSA A23.1-14, Concrete Materials and Methods of Concrete Construction.
 - .2 CSA A23.2-14, Methods of Test for Concrete.
 - .3 CSA A3001-13, Cementitious Materials for Use in Concrete.
 - .4 CSA S413-14 (R2019), Parking Structures.
- .4 Ontario Provincial Standards Specification (OPSS)
 - .1 OPSS.PROV 1010, Aggregates - Base, Subbase Select Subgrade, and Backfill Material.

1.3 SUBMITTALS

- .1 Submit all submittals, including samples and certificates, in accordance with Division 01.
- .2 Site Quality Control Submittals
 - .1 Minimum 4 weeks prior to starting concrete work, submit proposed quality control procedures for Consultant's review for the following items:
 - .1 Falsework erection.
 - .2 Hot weather concrete.
 - .3 Cold weather concrete.
 - .4 Concrete placing schedule.
 - .5 Curing.
 - .6 Finishing.
 - .7 Formwork removal.
 - .8 Joints.
- .3 Samples
 - .1 At least 4 weeks prior to commencing work, inform Consultant of proposed source of aggregates and provide access for sampling.
- .4 Certificates
 - .1 Minimum 4 weeks prior to starting concrete work submit to Consultant manufacturer's test data and certification by qualified independent inspection and testing laboratory that following materials will meet specified requirements:
 - .1 Portland cement.
 - .2 Blended hydraulic cement.
 - .3 Supplementary cementing materials.
 - .4 Grout.
 - .5 Admixtures.
 - .6 Aggregates.
 - .7 Water.

- .8 Waterstops.
- .9 Waterstop joints.
- .10 Joint filler.
- .11 Bonding agent.
- .12 Curing compound.
- .13 Column anchor rods.
- .14 Sealant.
- .15 Specified admixtures.
- .2 Provide certification that mix proportions selected will produce concrete of quality, yield and strength as specified in concrete mixes, and will comply with CSA-A23.1.
- .3 Provide certification that plant, equipment, and materials to be used in concrete comply with requirements of CSA-A23.1.
- .5 Anchor Rod Setting Diagrams: Submit detailed drawings for anchor rod setting.
- .6 Concrete Mix Designs
 - .1 Minimum four (4) weeks prior to starting concrete work submit concrete mix design for review including:
 - .1 CSA class of concrete exposure.
 - .2 Maximum water/cementing materials ratio (W/CM).
 - .3 Minimum concrete strength.
 - .4 Maximum aggregate size.
 - .5 Specific replacement limits on any materials (ie. fly ash, additives or ggbs).
 - .6 Air content and range.
 - .7 Architectural requirements.
 - .8 Durability requirements (ie. AVS or RCP).
 - .9 Slump at time of discharge.
 - .10 Contractor placement requirements.
 - .2 When optimum bulk density of aggregates is specified, provide supporting evidence of compliance with requirements.
 - .3 Review of mix design does not relieve Contractor from responsibility for compliance with Contract Documents.

1.4 QUALITY ASSURANCE

- .1 Qualifications:
 - .1 Provide work of this Section executed by competent installers with minimum of 5 years experience in application of Products, systems and assemblies specified and with approval and training of the Product manufacturers.
 - .2 The ready mix concrete supplier shall be a member in good standing of Ready Mix Concrete Association of Ontario (RMCAO).

1.5 PROJECT RECORDS

- .1 Concrete Pour and Delivery Records
 - .1 Maintain accurate records of concrete pours including the following information:
 - .1 Date and time of concrete pour.
 - .2 Location in building of each concrete pour.
 - .3 Cubic yards or metres of concrete including signed trip ticket for each truck.
 - .4 Specified strength of concrete.
 - .5 Air temperature when concrete was placed.
 - .6 Unusual occurrences during placement.
 - .7 Test samples taken and results of tests as described in PART 3.
 - .2 Keep these records on site until the project is completed.
 - .3 At completion of Work, submit a summary of such data to Consultant.
- .2 Record Drawings:
 - .1 Record on a set of Drawings:
 - .1 Time and date of each pour
 - .2 High and low ambient air temperature during each pour
 - .3 Date of removal of forms in each area
 - .4 Founding elevations of all footings
 - .5 Variations of foundation work from that shown on drawings
 - .2 Make record drawings available for Consultant's inspection at all times.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Store materials on site in a manner to prevent damage thereto. Protect from weather. Comply with CSA A23.1, Clause 9.
- .2 Protect work of this Section from damage. Protect other work from damage resulting from this work Replace damaged work which cannot be satisfactorily repaired.

Part 2 Products

2.1 MATERIALS

- .1 Cement and Supplementary Cementing Materials shall conform to CSA A3001
- .2 Water shall conform to CSA A23.1/A23.2.
- .3 Aggregates: to CSA A23.1/A23.2. Coarse aggregates to be normal density fine aggregates to CSA A23.1/A23.2.
- .4 Admixtures
 - .1 Air entraining admixture shall conform to CSA-A23.1/A23.2 and ASTM C260.

- .2 Chemical admixtures shall conform to ASTM C494. Consultant to approve accelerating or set retarding admixtures during cold and hot weather placing.
- .3 Concrete retarders shall conform to ASTM C494 and be water based, low VOC, and solvent free. Do not allow moisture of any kind to come in contact with the retarder film.
- .4 Admixtures may be added to concrete to provide following specific qualities as required or permitted in this Section shall meet the following criteria:
 - .1 Workability.
 - .2 Entrained air content.
 - .3 Controlled rate of handling.
 - .4 Compressive or flexural strength.
- .5 Admixtures shall conform to ASTM C260 and ASTM C494M except they shall not, individually or in combination, increase shrinkage of concrete compared with a reference specimen of same mix but not contained admixture.
- .6 Do not use admixtures containing chlorides.
- .5 Shrinkage compensating grout: premixed compound consisting of non-metallic aggregate, Portland cement, water reducing and plasticizing agents.
 - .1 Compressive strength: 50 MPa (7,250 psi) at 28 days.
 - .2 Consistency:
 - .1 Fluid: to ASTM C827. Time of efflux through flow cone (ASTM C939), under 30s.
 - .2 Flowable: to ASTM C 827. Flow table, 5 drops in 3s, (ASTM C109, applicable portion) 125 to 145%.
 - .3 Plastic: to ASTM C827. Flow table, 5 drops in 3 s, (ASTM C109, applicable portions) 100 to 125 %.
 - .4 Dry pack to manufacturer's requirements.
- .6 Non premixed dry pack grout: composition of non metallic aggregate Portland cement with sufficient water for the mixture to retain its shape when made into a ball by hand and capable of developing compressive strength of 35 MPa at 28 days.
- .7 Curing compound shall conform to CSA-A23.1 and at ASTM C309.
- .8 Waterstops
 - .1 Coordinate type location of waterstops with the requirements of Division 07.
 - .2 Ribbed waterstops: extruded PVC of sizes indicated with shop welded corner and intersecting pieces.
 - .3 Labyrinth waterstops: extruded PVC of sizes indicated with prewelded corner and intersecting pieces.
 - .4 Hydrophillic waterstops: extruded, expanding, non-bentonite, modified chloroprene rubber
- .9 Premoulded joint fillers
 - .1 Bituminous impregnated fiber board: to ASTM D1751.

- .2 Sponge rubber: to ASTM D1752, Type I, flexible grade.
- .3 Self-expanding standard cork: to ASTM D1752, Type III.
- .10 Weep hole tubes: plastic.
- .11 Bonding agent: Duralprep A.C. by Euclid Chemical; Sikatop Armatec 110 EpoCem or approved equivalent.
- .12 Wet Curing: Water conforming to CSA A23.1, Clause 4, clear and entirely free from any elements which might cause staining of concrete, and minimum 4 mil thick polyethylene film as specified herein.
- .13 Vapour Barrier: 0.15 mm (6 mil) polyethylene, unless otherwise specified in Division 07.
- .14 Granular Underbed for slabs on grade: Provide a minimum of 20mm (3/4") clear limestone, proof rolled for compaction, compacted thickness 200 mm (8"), unless otherwise specified on Drawings.

2.2 MIXES

- .1 Concrete
 - .1 Proportion concrete in accordance with CSA-A23.1, to provide the quality as indicated on drawings for all concrete. Concrete types are specified in accordance with CSA-A23.1 Table 5, Alternate 1.
 - .2 Concrete mixes shall be proportioned by the supplier to meet the performance specifications noted in the contract documents. In addition, concrete mix design shall satisfy the transport, placing, and finishing requirements of the Contractor.
 - .3 All concrete shall be normal weight unless noted otherwise.
 - .4 Ready-mixed concrete and concrete proportions shall be in accordance with CSA A23.1 and as follows:
 - .1 Minimum allowable compressive strength shall be 30 MPa (4350 psi) at 28 Days of age, unless otherwise noted or shown.
 - .2 If blended normal Portland cement/cementitious hydraulic slag is used except for floor mixes, slag content shall not be more than 25% of total mass of cement. Total volume of cement in concrete floor mixes shall be 100% Normal Portland Cement.
 - .3 Use of calcium chloride not permitted.
 - .4 Do not change concrete mix without prior approval of Consultant. Should change in material source be proposed, new mix design to be approved by Consultant.
 - .5 Where air entrainment is required, air content should have a range which is dependant on the exposure class and the aggregate size, based on the requirements outlined in CSA A23.1.
- .2 Concrete Toppings
 - .1 Provide topping with minimum 28 day compressive strength of 30 MPa.

- .3 Grout
 - .1 Dry pack grout under steel plates and where grout thickness does not exceed 75 mm (3").
 - .2 Premixed grout mixed in accordance with manufacturer's instruction.
 - .3 Dry pack grout for underpinning and where grout thickness equals or exceeds 75 mm (3").
 - .4 Mix one part Portland Cement, one and one-half (1.5) parts concrete sand and two parts of 10 mm (3/8") pea gravel, with only sufficient water that mix will retain its shape when made into ball by hand.

Part 3 Execution

3.1 PREPARATION

- .1 Notify Consultant at least 48 hours before commencing to place concrete, and 24 hours before wall forms are closed in.
- .2 Prior to placing of concrete obtain Consultant's approval of proposed method for protection of concrete during placing and curing.
- .3 In locations where new concrete is dowelled to existing work, drill holes in existing concrete. Place steel dowels of deformed steel reinforcing bars and pack solidly with epoxy grout to anchor and hold dowels in positions as indicated.
- .4 Confirm surfaces on which concrete is to be placed are free of frost, water and debris before placing concrete. Remove any wet or disturbed soil just prior to placing concrete.
- .5 Check that all forms are rigid and structurally safe, and that all reinforcing steel, formwork, sleeves, anchor rods, and other items are installed in accordance with the contract documents. Ensure that all trades have checked the security and location of all components required in the concrete by those trades.
- .6 Ensure that the electrical conduits have been properly set in the mid-height of the slab, beam, or other concrete. Avoid concentrations and crossing of conduit. Any such concentrations which are required shall be approved by the Consultant before concrete is placed. The Contractor shall coordinate the placing of reinforcement with the Electrical Subcontractor to ensure that both conduit and reinforcement are properly placed.
- .7 Obtain geotechnical Consultant's written confirmation that prepared subgrade is acceptable.

3.2 CONSTRUCTION JOINTS

- .1 Where construction joints other than those indicated on Drawings are required, locate in consultation with Consultant.

- .2 Unless agreed otherwise for specific locations by Consultant, provide shear keys in all construction joints. Normally, form keys from 38 x 89 (2" x 4") material. Depth of keys shall total approximately 1/4 of the depth of member. In deep members, use 2 or more keys. Face of previously placed concrete to be roughened to minimum amplitude of 6.4mm (1/4") at all construction joints (horizontal/vertical). Joints to be free of all debris/loose materials prior to concrete placement.
- .3 Construction joints shall be straight and plumb unless otherwise agreed for specific conditions.
- .4 Install PVC waterstops in horizontal and vertical construction joints in walls at or below grade, and at other locations where shown. Waterstops shall be continuous throughout length of joint.
 - .1 Install waterstops to provide continuous waterseal. Do not distort or pierce waterstop in such a way as to hamper performance. Do not displace reinforcement when installing. Tie waterstops in place.
 - .2 Use only straight heat sealed butt joints in field. Use factory welded corners and intersections, unless otherwise approved by Consultant.
- .5 Unless otherwise detailed on the Structural Drawings, reinforcement shall be continuous through construction joints.
- .6 Maximum length of pour not to exceed 18 m (60 ft.), unless advance authorization is obtained from Consultant.

3.3 CONTROL JOINTS

- .1 In walls, form grooves for control joints on both faces, as detailed. Unless otherwise noted, cut or stop alternate horizontal reinforcing bars at the joints. Provide sealant and sealant backing per Division 07.
- .2 In slab on grade floors, form or sawcut control joints as detailed. Where 'diamonds' or other isolation joints are shown to be constructed around columns or piers, place after the floor has been concreted and sawcuts have been made.
- .3 Use 10 mm (3/8") thick joint filler to separate slabs-on-grade from vertical surfaces and extend joint filler from bottom of slab to within 10 mm (3/8") of finished slab surface unless indicated otherwise.

3.4 EXPANSION JOINTS

- .1 Provide expansion joints where shown and as detailed.
- .2 In exterior walls, or interior walls against soil, install PVC waterstop for full length of joint. Fill joint with pre-moulded plastic foam filler to within 25 mm (1") of wall faces. Provide sealant and sealant backing per Division 07.
- .3 Expansion joints in floors and walls shall be continuous from one to the other.

3.5 COOPERATION WITH OTHER TRADES

- .1 Sleeves and inserts
 - .1 No sleeves, ducts, pipes or other openings shall pass through joists, beams, column capitals or columns, except where indicated or approved by Consultant in writing.
 - .2 Where approved by Consultant in writing, set sleeves, ties, pipe hangers and other inserts and openings as indicated or specified elsewhere. Sleeves and openings greater than 100 mm x 100 mm (4" x 4") not indicated, must be reviewed by Consultant.
 - .3 Do not eliminate or displace reinforcement to accommodate hardware. If inserts cannot be located as specified, obtain approval of modifications from Consultant before placing of concrete.
 - .4 Check locations and sizes of sleeves and openings shown on drawings.
 - .5 Set special inserts for strength testing as indicated and as required by non-destructive method of testing concrete.
- .2 Anchor rods
 - .1 Set anchor rods to templates under supervision of appropriate trade prior to placing concrete.
 - .2 Protect anchor bolt holes from water accumulations, snow and ice build-ups.
 - .3 Locate anchor bolts used in connection with expansion shoes, rollers and rockers with due regard to ambient temperature at time of erection.
- .3 Drainage holes and weep holes
 - .1 Form weep holes and drainage holes in accordance with Section 03 10 00 - Concrete Formwork. If wood forms are used, remove them after concrete has set.
 - .2 Install weep hole tubes and drains as indicated.
- .4 Dovetail anchor slots
 - .1 Install continuous vertical anchor slot to forms where masonry abuts concrete wall or columns.
 - .2 Install continuous vertical anchor slots at 800 mm (32") o.c. where concrete walls are masonry faced.
 - .3 Anchor slots to be positioned relative to the reinforcement in such a way as to not compromise the clear cover required for fire resistance rating.
- .5 Grout under base plates and machinery using procedures in accordance with manufacturer's recommendations which result in 100% contact over grouted area.

3.6 SITE TOLERANCE

- .1 Concrete tolerance in accordance with CSA A23.1 F-number system.

- .2 Finish slab or floor slabs to meet following tolerances when measured within 72 hours after placement and before shores are removed from formed slabs:
 - .1 Slab on Grade
 - .1 “Conventional”: Class A, F_F20, F_L15
 - .2 “Flat”: Class B, F_F25, F_L20

3.7 DEPOSITING

- .1 Obtain Consultant's review before placing concrete. Provide a minimum of 24 hours notice prior to placing of concrete. If less than 48 hours notice is provided, Contractor is solely responsible for any delays incurred if Consultant is unable to review within the time period provided.
- .2 In slab construction, ensure that all bottom steel and at least 66% of top steel is in place and reviewed before commencing concrete placement. For walls and columns leave one side of form open for review of reinforcing. Close furring only after Consultant has reviewed bar placement.
- .3 Pumping of concrete is permitted only after approval of equipment and mix in writing by Consultant.
- .4 Ensure reinforcement and inserts are not disturbed during concrete placement.
- .5 Convey concrete from the mixer to the place of final deposit by methods which will prevent the separation or loss of ingredients. Chutes, if used, shall be rounded in cross-section and have a minimum diameter of 8 times the maximum aggregate size.
- .6 Do not displace rebar and/or mesh from their specified location.
- .7 Do not deposit any concrete in the work which has partly hardened or which has been contaminated with foreign matter.
- .8 Cast footings, beams and slabs their full design depth in 1 operation. In upstand beams, stepped footings and similar details cast the upper portion as soon as stiffening of the lower portion will permit. The consistency of the lower portion shall be of lower slump than generally specified for the class of work. Remove any free water or laitance from the lower portion before the subsequent layer of concrete is placed.
- .9 Immediately before placing concrete in walls, cover the bottom of the form with a layer of stiff grout. Proportions of cement and sand in the grout shall be similar to that in the concrete being used in the wall.
- .10 Place and consolidate concrete in floors (suspended and on grade) and screed to level ready for finishing under the concrete floor finish section.
- .11 Do not exceed 1.5 m (5'-0") for the free vertical drop of the concrete unless special measures are taken to prevent segregation.
- .12 Where pumps are to be used for placing concrete design the concrete mix accordingly. Maintain design slump at point of entry into pumps and add superplasticizer to take into account the slump lost during the pumping process.

- .13 Unless otherwise agreed by the Consultant, consolidate concrete including slabs on grade in place by means of internal vibrators. Use the largest vibrator consistent with the type and location of concrete being placed. Vibrators shall be in accordance with CSA A23.1, Table 14.
- .14 When concrete is being placed in deep members (such as walls and footings) vibrators shall be inserted and withdrawn vertically, and shall not be used to flow concrete into final position. They shall be lowered through the full lift of concrete into the lift below, to ensure blending of the concrete in the two lifts.
- .15 Apply vibrators systematically and at such spacing that the zones of influence over-lap. Do not over-vibrate.
- .16 Keep 1 spare vibrator for every three vibrators in use, in case of breakdown.
- .17 After completing concrete in walls or columns, allow at least two hours before placing slabs and beams supported thereon.
- .18 Install continuous waterstops in location shown, fixed rigidly in forms prior to concreting. Waterstop splices to be heat welded in such a manner that the water stopping action will not be impaired.
- .19 Install dovetail anchor slots where masonry abuts or covers concrete walls and columns. Make maximum spacing on concrete walls 600 mm (24").
- .20 Floor slabs with Surface Hardener Finish: Cast with an air content not exceeding 3%. Add no admixture to concrete mix that will increase bleeding. Concrete slump as required for method of placement.

3.8 TEMPERATURE OF CONCRETE

- .1 Concrete shall be delivered to the work having a temperature as specified in Table 14 of CSA A23.1 according to the thickness of the section to be cast.
- .2 In no case shall the placing temperature for high-performance concrete exceed 25°C.

3.9 COLD WEATHER PROTECTION

- .1 When the air temperature is below, or is likely to fall below 5 deg C (40 deg F) (as forecast by the local meteorological office) carry out all concrete work in accordance with the recommendations of CSA A23.1. Have all equipment prepared and operational before commencing to place concrete.
- .2 When heated concrete is exposed to drying effects of wind, provide adequate windbreaks to protect the surface.
- .3 Methods of heating shall be such as to prevent discharge of combustion products over, or drying of, surface of fresh concrete.
- .4 Keep a permanent temperature record conforming to following requirements:
 - .1 Records to show date, time, outside temperature and maximum and minimum temperature at several points within any enclosure, before the placing of concrete in or above enclosure.

- .2 Use maximum and minimum type thermometers for measuring temperature. If concrete is placed on forms heated from an enclosure below, place thermometers close to the underside of the forms. Temperature record to be kept available for Consultant's inspection at any time.
- .5 Temperature of air within enclosures shall not exceed 32 deg C (90 deg F). Maintain concrete temperatures at 21 deg C (70 deg F) for 5 days. Removal of concrete protection shall conform to CSA A23.1, clause 21.2.6.
- .6 Do not place concrete on frozen ground, on ground which contains frozen materials, nor on or against any surface which is at a temperature of less than 10 deg C (50 deg F.).

3.10 HOT WEATHER PROTECTION

- .1 Carry out hot weather concreting, unless otherwise specified, in accordance with CSA A23.1.
- .2 Protect concrete from effect of hot or drying weather conditions. Protect forms and reinforcing from the direct rays of the sun, or cool by fogging and evaporation.
- .3 Refer to curing article for special curing precautions in hot weather.

3.11 CURING

- .1 Protect and cure concrete in such a manner as to prevent evaporation of moisture from the concrete and injury to the surface.
- .2 When the air temperature may exceed 27 deg C (80 deg F) curing shall be by methods which keep the surface continually moist for at least 7 days after placing, commencing immediately the concrete has set sufficiently. Moisture shall be applied by fogging or by the application of wetted burlap, or by other acceptable methods which will not damage the surface. A curing membrane is not acceptable under these conditions.
- .3 When the temperature will not exceed 27 deg C (80 deg F) a curing membrane specified herein may be used. Membrane curing over slab shall be compatible with finish to be applied. For sidewalks, curbs and similar exterior concrete, use a membrane specified herein.
- .4 Do not use a curing membrane on architectural exposed concrete or where a topping is to be applied.
- .5 For vertical surfaces, forms shall be left in place for a minimum of seven curing days or alternatively forms may be stripped earlier, and the surfaces kept covered with wet burlap, subject to the Consultant's approval. Wood forms remaining in place shall be wetted down during periods of hot weather.
- .6 Except as noted herein above, curing of finished concrete floors and concrete toppings under Concrete Floor Finishes Section.
- .7 Do not place load upon new concrete until authorized by Consultant.

3.12 NON SHRINK GROUT

- .1 Grout between column and base plates and bearing surface of concrete piers and foundations and/or masonry walls. Use a premix non-shrink grout in accordance with the manufacturers directions, and with a minimum 28 day strength of 50 MPa. Base plates up to 15" square shall be dry-packed. Place a rigid form on 2 adjacent sides and pack grout against the form from the other sides.
- .2 Where accessibility is difficult and for bases in excess of 15" square use a flowable grout. Install the grout with a positive hydraulic head and ensure that provision is made for escape of air from below the baseplate.
- .3 In areas where the grout is exposed in the finished work, use a non-staining material.
- .4 When grout is being placed at air temperatures below 4 deg C (40 deg F), ensure that concrete, grout and steel is preheated to 21 deg C (70 deg F) before grouting. Enclose grouted area (including nearest 1.5 m (5') length of all steel connecting to the base) and maintain at 10 deg C (50 deg F) for a minimum of 3 days. If required by Consultant, submit a written proposal describing the heating methods to be adopted.

3.13 SKIM COATS AND CONCRETE BACKFILL

- .1 If concrete for foundations cannot be placed on the same day that excavation is carried out, cover the bottom of the excavation with a skim coat of plain concrete, minimum thickness 50 mm (2") or as required by Geotechnical Engineer.
- .2 Immediately after completing excavation for footings, and before placing any reinforcement, cover the bottom of the excavation with a 50 mm (2") skim coat of plain concrete or as required by Geotechnical Engineer.
- .3 If foundation excavations are to be left open long enough for water to collect in the bottom, or if rain is forecast before the foundation concrete can be placed, cover the bottom of the excavation with 50 mm (2") skim coat of concrete or as required by Geotechnical Engineer.
- .4 During the excavations, if soft areas are located and the depth of such excavation has to be increased, backfill the areas with plain concrete. The cost of the extra concrete will be paid for at the unit rate stated in the unit prices section. Contractor is responsible for submitting unit rate for this type of work. Obtain Consultant's instructions before undertaking this work.

3.14 MISCELLANEOUS CONCRETE

- .1 Be responsible for grouting and concrete work, reinforcement, formwork, and similar items including supply and placing of all materials for exterior concrete, platforms, toppings, housekeeping pads and curbs for mechanical and electrical work, benches, stairs, paving and landscape components:
- .2 Construct trenches and pits. Angle frames and covers to be supplied under Division 05 but installed under this Section.

- .3 Provide and install concrete fill for treads and landings of steel stairs where shown. Use concrete with 10 mm (3/8") maximum aggregate in treads 20 mm (3/4") in landings, and reinforced with 4 x 4 x w1.5/w1.5 welded wire mesh, tied to 6 mm (1/4") studs welded to steel pans. Studs to be provided and installed under the Steel Stair and Railing Division 05.
- .4 Construct catch basins and manholes as shown and detailed. Install standard safety ladder rungs. Pipe connections to be supplied and installed under the Plumbing and Drainage Section. Masonry top, frames and grating to be supplied under the Masonry and Manufactured Specialties Sections.
- .5 Construct concrete bases and housekeeping pads, including tank storage bases, as shown on the drawings and as required by other Sections.
- .6 Construct concrete curbs as shown on Drawings.
- .7 Provide and install concrete and reinforcing steel to all reinforced concrete, concrete block lintels, bond beams and bearing blocks. Concrete block lintel and bond beam units and bearing blocks will be supplied and installed under the Masonry Section 04 20 00.
- .8 Division 33 Utilities: Utility Structures requiring concrete to follow Division 03 requirements.

3.15 EXTERIOR CONCRETE STEPS, PLATFORMS, WALKS

- .1 Exterior concrete steps and stairs, where indicated on the drawings, shall be of reinforced concrete.
- .2 Construct concrete walks and platforms with sides straight and plumb, and edges slightly rounded.
- .3 Lay concrete platforms with positive slope away from the building. This slope shall not be less than 20 mm in one metre (1/4" in 1'-0") unless indicated otherwise on drawings.
- .4 Unless otherwise noted, lay walks with crown, except where they abut a wall, in which case slope walk away from wall.
- .5 Unless otherwise shown, platforms and sidewalks shall be 125 mm (5") thick and be reinforced with 6 x 6 x w2.1/w2.1 welded wire mesh.
- .6 Provide control and expansion joints in sidewalks and platforms. Install premoulded expansion joint filler to expansion joints. Unless otherwise shown, provide expansion joints at maximum spacing of 4.5 m (15'-0") and control joints at maximum spacing of 1.5 m (5'-0"). Control joints shall be tooled with a 'V' section. Expansion joints shall be tooled with rounded section, approximately 6 mm (1/4") radius.
- .7 Finish top surface of steps, platform and walks by trowelling all tool marks from top surface of concrete and then brushing with a corn broom. Broom strokes shall be continuous across the surface. Direction of finish shall be across the narrow width of the concrete unless otherwise directed by Consultant.
- .8 Municipal Sidewalks
 - .1 Construct new municipal sidewalks as shown and/or repair existing sidewalks where damaged.

- .2 Replace all municipal sidewalks around building, and any other municipal sidewalks damaged during construction of project.
- .3 Construct municipal sidewalks in accordance with municipal code, and to approval of municipal authority. Locate expansion joints and control joints as shown on the drawing.
- .4 Coordinate heated paved areas with Mechanical (or Electrical Division. Refer to mechanical (electrical) specification and drawings.
- .5 Where concrete slabs are covered with a layer of asphalt, slope the surface of the concrete to conform to the profile of the surface of the asphalt as shown.

3.16 PATCHING

- .1 Make good temporary openings left in concrete work for pipes, conduit, ducts, shoring and other such work, using mix or mortar of same proportions as surrounding work, reinforced with wire mesh as required, and finish to match surrounding work.
- .2 Have enough expert cement finishers available to complete required patching on same day as forms are stripped.
- .3 Make good/patch/infill all openings in slabs/walls in existing buildings that are no longer being used/or have been previously abandoned. Where the demolition of any mech/elect/arch elements passing through/embedded in slabs and walls leaves openings/penetrations these are to be patched/infilled. Refer to typical details for infill requirements u/n otherwise on plans and sections.

3.17 CONCRETE EXPOSED IN FINAL STRUCTURE

- .1 Before concrete is placed, thoroughly clean forms, re-tighten as is necessary and saturate the surface of construction joints and form sides with water.
- .2 The maximum free drop of concrete shall not exceed 1.3m (4'-0").
- .3 Deposit concrete in as close to its final position as possible and do not allow to flow laterally more than 0.6m (2").
- .4 For depositing concrete in walls provide suitably sized tapered pouring boxes to funnel the concrete into the forms. Provide sufficient boxes for each pour such that they can be placed simultaneously at approximately 2m (6'-0") on centres for the entire length of the pour.
- .5 To compact concrete use internal vibrators 25mm (1") to 50mm (2") in diameter as required. Apply vibrators at sufficiently short intervals (about 0.5m (1'-6") to 1.0m (3'-0")) of distance, such that vibrated areas overlap without omission of any part. Ensure that the vibrators are inserted through the layer being compacted but take care not to damage form sheathing. Leave vibrator in place from 5 to 15 seconds and withdraw slowly leaving the vibrator operating.
- .6 Arrange operations so that once a pour is started, concreting is carried on continuously and the concrete at the surface of the pour is maintained plastic until the completion of section.

- .7 Shortly after concrete is placed and compacted to the top of walls or columns or the top of construction joints, rework the concrete with wooden chisels at the exposed faces to a depth of at least .6m (2') and then re-vibrate.
- .8 Trowel the surface of construction joints adjacent to exposed faces, flush and level. Joints in walls shall be made at the top of any reglet unless shown otherwise.
- .9 Provide smooth form finish to concrete surfaces exposed to public view and surfaces to receive plaster, damp-proofing, moisture resistant membrane and the like.
- .10 Remove traces of form lining compound from concrete surfaces which may affect the bonding of following surface application.

3.18 OPENINGS THROUGH STRUCTURAL WORK

- .1 If, after any part of the structural work has been completed, it is required that additional openings be made through the structure, the Consultant shall be so informed. No opening, including cored sleeves, shall be made through completed work without authorization in writing from the Consultant.
- .2 Where the location of openings is approved, locate the reinforcement by x- ray, or other positive means as required by Consultant and adjust the location of the opening so that no reinforcement is cut unless specifically approved otherwise in writing by Consultant.

3.19 FIELD QUALITY CONTROL

- .1 Inspection and testing of concrete and concrete materials will be carried out by a Testing Laboratory designated by Consultant in accordance with CSA-A23.1 and Division 01.
- .2 Tests will be made in accordance with CSA A23.2.
- .3 Contractor will take additional test cylinders during cold and hot weather concreting. Cure cylinders on job site under same conditions as concrete which they represent.
- .4 Not less than three cylinders from each Day's pour for each 76.5m³ (100yd³) of concrete, or for each 30.5m³ (40 yd³) of concrete poured in small amounts on successive Days will be tested.
- .5 Air entrainment test and slump test made from same batch of concrete from which test cylinders are made.
- .6 Inspection Company's reports of tests will be forwarded to Consultant and Contractor with an opinion or reason for any abnormalities noted thereon.
- .7 Cooperate with and assist Inspection Company's personnel during inspection and tests.
- .8 Remove defective materials and completed work which fails tests and replace as directed by Consultant.
- .9 Where work or materials fail to meet strength requirements as indicated by test results, pay costs of additional inspection and testing required for new replacement work or materials.
- .10 Inspection or testing by Consultant will not augment or replace Contractor quality control nor relieve him of his contractual responsibility.

3.20 NON-CONFORMING WORK

- .1 In the event that concrete tests do not conform to the requirements of this specification, or when conditions are such to cause doubt about the safety of the structure, testing of the structure will be undertaken at the direction of the Consultant. This may entail further concrete tests, coring or load testing as per the Standard, or any other test the Consultant deems suitable. Such test shall be made at the expense of the Contractor and to the satisfaction of the Consultant.
- .2 Where, in the opinion of the Consultant, material or workmanship fails to meet the requirements of the specification, such work may be rejected. Work rejected shall be replaced or repaired to the approval of the Consultant and at no additional cost to the Owner.

END OF SECTION

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1. GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 04 05 12 Masonry Mortar and Grout
- .2 Section 04 05 19 Masonry Anchorage and Reinforcing
- .3 Section 04 05 23 Masonry Accessories
- .4 Section 04 21 13 Brick Masonry

1.2 REFERENCES

- .1 ASTM International ASTM A 496/A 496M-07, Standard Specification for Steel Wire, Deformed, for Concrete Reinforcement.
- .2 Do masonry work in accordance with CSA A371-94 except where specified otherwise. Maintain a copy of this standard on job site during masonry work.
- .3 CSA International
 - .1 CAN/CSA-A82-06, Fired Masonry Brick Made From Clay or Shale.
 - 2 CAN/CSA-A165 SERIES-04(R2009), CSA Standards on Concrete Masonry Units covers: A165.1, A165.2, A165.3.
 - .3 CAN/CSA-A179-04(R2009), Mortar and Grout for Unit Masonry.
 - .4 CAN/CSA-A370-04(R2009), Connectors for Masonry.
 - .5 CAN/CSA A371-04(R2009), Masonry Construction for Buildings.
 - .6 CSA G30.18-09, Carbon Steel Bars for Concrete Reinforcement.
 - .7 CSA S304.1-04(R2009), Design of Masonry Structures.
- .4 Health Canada / Workplace Hazardous Materials Information System (WHMIS), Material Safety Data Sheets (MSDS).
- .5 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards, SCAQMD Rule 1113-A2007, Architectural Coatings.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Provide testing and inspection results for review by Consultant and do not proceed without written approval when deviations from mix design or parameters are found.
- .3 Concrete pours: provide accurate records of poured concrete items indicating date and location of pour, quality, air temperature and test samples taken.
- .4 Concrete hauling time: provide for review by Consultant deviations exceeding maximum allowable time of 120minutes for concrete to be delivered to site of Work and discharged after batching.

1.4 JOB MOCK-UP

- .1 Construct mock-up panel of exterior masonry wall construction 1200 mm (4'-0") x 1800 mm (6'-0") showing masonry colours and textures, use of reinforcement, ties, through-wall flashing, weep holes, jointing, coursing, mortar, and workmanship.
- .2 This mock-up will form the standard for the project and all workmanship shall meet this standard. The mock-up may remain part of the final project.

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1.5 SOURCE QUALITY CONTROL

- .1 Submit laboratory test reports certifying compliance of masonry units and mortar ingredients with specification requirements.
- .2 For clay units, in addition to requirements set out in referenced CSA and ASTM Standards, include data indicating initial rate of absorption for units proposed for use.

1.6 SAMPLES

- .1 Submit samples in accordance with the following:
 - .1 Two (2) of each type of masonry unit specified
 - .2 One (1) of each type of masonry accessory specified
 - .3 One (1) of each type of masonry reinforcement and tie proposed for use
 - .4 Other items required for testing purposes

1.7 PRODUCT DELIVERY, STORAGE AND HANDLING

- .1 Deliver materials to job site in dry condition.
- .2 Keep materials dry until use, except where wetting of bricks is specified.
- .3 Store under waterproof cover on pallets or plank platforms held off ground by means of plank or timber skids.

1.8 COLD WEATHER REQUIREMENTS

- .1 Comply with the Cold Weather Protection Requirements of CAN/CSA A371 as well as with the requirements of this specification.
- .2 When air temperature is below 5 degrees C take following precautions in preparing and using mortar:
 - .1 Heat sand slowly and evenly. Do not use scorched sand, having a reddish cast, in mortar
 - .2 Heat water to 70 degrees C maximum
 - .3 After combining heated ingredients maintain temperature of mortar between 5 degrees C and 50 degrees C until used
 - .4 Protect mortar from rain and snow
- .3 Maintain dry beds for masonry and use dry masonry units only. Do not wet masonry units in cold weather
- .4 When air temperature is below -4 degrees C protect and heat masonry to maintain air temperature above 0 degrees C on both sides of walls
- .5 When air temperature is below -4 degrees C, erect windbreaks to prevent differential freezing of walls

1.9 HOT WEATHER REQUIREMENTS

- .1 Comply with the Hot Weather Requirements of CAN/CSA A371 as well as with the requirements of this specification.
- .2 Protect freshly laid masonry from drying too rapidly, by means of waterproof, non-staining coverings

1.10 PROTECTION

- .1 Keep masonry dry using waterproof, non-staining coverings that extend over walls and down sides sufficient to protect walls from wind driven rain, until masonry work is completed and protected by flashings or other permanent construction
- .2 Protect masonry and other work from marking and other damage. Protect completed work from mortar droppings. Use non-staining coverings
- .3 Provide temporary bracing of masonry work during and after erection until permanent lateral

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support is in place.

1.11 QUALIFICATIONS

- .1 Masons are to be skilled and specialized in masonry installations, with five (5) years' experience with work similar to this project.
- .2 Masons are to demonstrate ability to reproduce mock-up standards.
- .3 The supervising mason is to be a qualified mason with five (5) years' documented experience supervising similar projects.

2. PRODUCTS

2.1 MATERIALS

- .1 Masonry materials are specified in related Sections indicated in Related Requirements.

3. EXECUTION

3.1 WORKMANSHIP

- .1 Do masonry work in accordance with CSA-A371 except where specified otherwise.
- .2 Build masonry plumb, level, and true to line, with vertical joints in alignment.
- .3 Lay out coursing and bond to achieve correct coursing heights, and continuity of bond above and below openings, with minimum of cutting
- .4 Full head joints shall be attained by buttering both ends of each unit. Slushing of head joints after the unit is in place is not permitted.

3.2 TOLERANCES

- .1 Deviation in joint thickness: +/- 2 mm (1/16")
- .2 Walls to receive thinset ceramic tile: plumb within 1:600.

3.3 EXPOSED MASONRY

- .1 Remove chipped, cracked, and otherwise damaged units in exposed masonry and replace with undamaged units.

3.4 JOINTING

- .1 Allow joints to set just enough to remove excess water, then tool with a round stainless steel jointer to provide smooth, compressed, uniformly concave joints.
- .2 Strike flush all joints concealed in walls and joints in walls to receive plaster, tile, insulation, membrane or other applied material except paint or similar thin finish coating.

3.5 JOINING OF WORK

- .1 Where necessary to temporarily stop horizontal runs of masonry and in building corners:
 - .1 Step back masonry diagonally to lowest course previously laid
 - .2 Do not "tooth" new masonry
 - .3 Fill in adjacent courses before heights of stepped masonry reach 1200 mm (4'-0")

3.6 CUTTING

- .1 Cut out neatly for electrical switches, outlet boxes, and other recessed or built-in objects
- .2 Make cuts straight, clean, and free from uneven edges.

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3.7 BUILDING-IN

- .1 Build in items required to be built into masonry
- .2 Prevent displacement of built-in items during construction. Check plumb, location, and alignment frequently, as work progresses
- .3 Brace door jambs to maintain plumb. Fill spaces between jambs and masonry with mortar.

3.8 WETTING OF BRICK

- .1 Except in cold weather, wet clay bricks having an initial rate of absorption exceeding one g/min/1000 mm²: wet to uniform degree of saturation, three (3) to twenty-four (24) hours before laying, and do not lay until surface is dry.
- .2 Wet tops of walls built of bricks qualifying for wetting, when recommencing work on such walls.

3.9 SUPPORT OF LOADS

- .1 Use 20 MPa concrete to Section 03 30 00: Cast-in-Place Concrete, where concrete fill is used in lieu of solid units
- .2 Use grout to CSA A179-M94 where grout is used in lieu of solid units
- .3 Install metal lath strips below voids to be filled with grout; keep strips 25 mm, 1" back from faces of units.

3.10 PROVISION FOR MOVEMENT

- .1 Leave 20 mm space between top of non-load bearing walls and partitions and structural steel elements, including but not limited to steel deck and steel shelf angles. Do not use wedges.
- .2 Reinforce and grout solid cores on each side of control joint in concrete masonry.

3.11 LOOSE STEEL LINTELS

- .1 Provide and install loose steel lintels on all exterior openings. Centre over opening width. Provide minimum bearing of 150 mm on each side, unless noted otherwise. Provide minimum L75x75x10mm unless noted otherwise.

3.12 FILLING CORES

- .1 Place and grout reinforcing in accordance with CSA A371-94 and as indicated
- .2 Grout all block cores which are reinforced.
- .3 Grout parapet walls solid down to top of structural deck
- .4 Grout block cores solid for two courses below bearing points of structural and stair members, and as indicated on drawings.

3.13 OPENINGS

- .1 At all openings form, brace, and set lintel blocks for concrete block lintels. Provide min. 200 mm bearing. Install reinforcing and concrete as per structural drawings or if not shown, use two 15 M bars for lintels up to 1.2 m wide. Use 400 mm deep lintel and four 15 M bars for lintels up to 2.4 m wide
- .2 At all openings in block masonry walls exceeding 600 mm in depth, fill core at each side and for 600 mm past the top and bottom of opening with grout and reinforce with reinforcing as specified for wall. Similarly treat openings over 1.2 m in depth but extend grout and reinforcement the full storey height.

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3.14 CONTROL JOINTS

- .1 Provide continuous vertical shrinkage control joints in block masonry walls at locations indicated or at max. 9 m o.c. in approved locations and between masonry walls supported on slab on grade and walls supported on structural foundation. Provide joints 20 mm wide by 40 mm deep or sufficient depth to accommodate a properly sized sealant joint with joint backing rod. Use "Chicago" joint.
- .2 Provide continuous vertical control joints in brickwork at locations indicated or at max. 15 m o.c. at max. 5.7 m from wall corners, in approved locations.
- .3 Stop horizontal masonry reinforcing 25 mm from each side of control joints
- .4 Bond beam reinforcing to be continuous across control joints. Provide half block and vertical joint across bond beam
- .5 Keep control joints free of mortar. Caulk joint. Provide backer rod.

3.15 CAVITY WALLS

- .1 Provide weep holes by leaving fully open head joints at the base of every masonry cavity, on maximum 600 mm o.c. spacing, ensuring that there are at least two (2) weep holes in any cavity.
- .2 Do not provide vent holes at the top of any masonry cavity.
- .3 Keep cavity free of mortar and mortar droppings. Place wood strip on ties or reinforcement to catch all mortar droppings. Remove as work progresses. Back slope mortar beds at cavities just sufficient to minimize mortar projection into cavity.
- .4 Provide continuous metal cavity air stops to details shown on drawings, secure at maximum 600 mm o.c., through a continuous bead of sealant.

3.16 TESTING

- .1 Inspection and testing will be carried out by Testing Laboratory designated by the Owner
- .2 Owner will pay costs for testing.

3.17 CLEANING

- .1 Clean in accordance with Section 01 74 11- Cleaning.

END OF SECTION

Section 04 05 12

MASONRY MORTAR AND GROUT

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1. GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 04 04 99 Masonry Procedures
- .2 Section 04 05 19 Masonry Anchorage and Reinforcing
- .3 Section 04 05 23 Masonry Accessories
- .4 Section 04 21 13 Brick Masonry

1.2 REFERENCES

- .1 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-A23.1/A23.2-04, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
 - .2 CAN/CSA A179-04, Mortar and Grout for Unit Masonry.
 - .3 CAN/CSA A371-04, Masonry Construction for Buildings.
 - .4 CAN/CSA-A3000-03, Cementitious Materials Compendium; CAN/CSA-A3002-[03], Masonry and Mortar Cement.
- .2 South Coast Air Quality Management District (SCAQMD), California State(SCAQMD)
 - .1 SCAQMD Rule 1168-05, Adhesives and Sealants Applications.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Product Data:
 - .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Provide manufacturer's printed product literature, specifications and datasheets. Include product characteristics, performance criteria, and limitations.
 - .3 Provide Workplace Hazardous Materials Information System (WHMIS) - Material Safety Data Sheets (MSDS) in accordance with Section 01 35 29 - Health and Safety Requirements. Indicate VOC's mortar, grout, parging, colour additives and admixtures. Expressed as grams per litre (g/L).
- .2 Samples: Provide samples of mortar and coloured mortar.
- .3 Manufacturer's Instructions: Provide manufacturer's installation instructions.

1.4 QUALITY ASSURANCE

- .1 Test Reports: certified test reports including sand gradation tests in accordance with CAN/CSA A179 showing compliance with specified performance characteristics and physical properties.
- .2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .3 Pre-Installation Meetings: conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.
- .4 Mock-ups: Construct mock-ups in accordance with Section 01 45 00 - Quality Control supplemented as follows:
 - .1 Construct mock-up sample panel of pointing.
 - .2 Sample panel: 3000 mm x 3000 mm using proposed procedures, colours, texture, finish and workmanship.

1.5 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, store and handles masonry mortar and grout materials in accordance with Section 01 61 00 - Common Product Requirements, supplemented as follows:

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MASONRY MORTAR AND GROUT

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- .1 Deliver prepackaged, dry-blended mortar mix to project site in labelled plastic-lined bags each bearing name and address of manufacturer, production codes or batch numbers, and colour or formula numbers.
- .2 Maintain mortar, grout and packaged materials clean, dry, and protected against dampness, freezing, traffic and contamination by foreign materials. include data indicating initial rate of absorption for units proposed for use.

1.6 SITE CONDITIONS

- .1 Ambient Conditions: maintain materials and surrounding air temperature to:
 - .1 Minimum 5 degrees C prior to, during, and 48 hours after completion of masonry work.
 - .2 Maximum 32 degrees C prior to, during, and 48 hours after completion of masonry work.
- .2 Weather Requirements: CAN/CSA A371 - Recommended Practices and Guide Specifications for Hot and Cold Weather Masonry Construction.

2. PRODUCTS

2.1 MATERIALS

- .1 Use same brands of materials and source of aggregate for entire project.
- .2 Cement:
 - .1 Portland Cement: to CAN/CSA-A3000.
 - .2 Masonry Cement: to CAN/CSA-A3002 and CAN/CSA A179.
 - .3 Mortar Cement: to CAN/CSA-A3002 and CAN/CSA A179.
 - .4 Packaged Dry Combined Materials for mortar: to CAN/CSA A179.
- .3 Aggregate: supplied by one supplier.
 - .1 Fine Aggregate: to CAN/CSA A179. Use aggregate passing 1.18 mm (1/16") sieve where 6 mm (1/4") thick joints are indicated.
 - .2 Course Aggregate: to CAN/CSA A179.
- .4 Water: clean and potable.
- .5 Lime: Quick Lime to CAN/CSA A179. Hydrated Lime to CAN/CSA A179.
- .6 Bonding Agent: epoxy type.
- .7 Polymer Latex: organic polymer latex admixture of butadiene-styrene type non-emulsifiable bonding admixture.
- .8 Dirt resistant additives: aluminum tristearate, calcium stearate or ammonium stearate.
- .9 Concrete: CSA A23.1, A23.2-2000. Fill bond beams and lintels with 20 MPa pea gravel concrete.
- .10 Grout: to CSA A179-94 (R1999) Table 3.
- .11 Dry-block II mortar admixture: water repellent, bond enhancing admixture by Grace Construction Products Tel: (414) 354-4400, equal or better as recommended by manufacturer of SMU units.

2.2 COLOUR ADDITIVES

- .1 Use colouring admixture not exceeding 10% of cement content by mass, or integrally coloured masonry cement, to produce coloured mortar to match approved sample. Admixtures to be approved prior to use. Use in accordance with the specific manufacturer's recommendations.
- .2 Use coloured mortar for brick and SMU work. Colours will be chosen by Architect from manufacturer's full range. Allow for a maximum of five (5) colours.
- .3 White mortar: use white Portland cement, and lime to produce mortar type specified.
- .4 Powder: Colour as selected.
- .5 Comply with CSA A179-M94 for mortar strength.

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2.3 MORTAR MIXES

- .1 Mortar for exterior masonry above grade:
 - .1 Loadbearing: type S based on proportion specifications.
 - .2 Non-Loadbearing: N based on proportion specifications.
- .2 Mortar for interior masonry:
 - .1 Loadbearing: type S based on proportion specifications.
 - .2 Non-Loadbearing: N based on proportion specifications.
- .3 Mortar for Parapet walls, chimneys, unprotected walls: type S based on proportion specifications, 12 MPa full bed, CAN/CSA A179.
- .4 Mortar for special masonry unit (SMU) veneer: Dry-block II mortar admixture: water repellent, bond enhancing admixture as recommended by Manufacturer of SMU units. Contractor to submit shop drawings for this product.
- .5 Pointing Mortar: CAN/CSA A179, Type S using property specification with maximum 2 percent ammonium stearate or calcium stearate per cement weight.
- .6 Stain Resistant Pointing Mortar: one part Portland cement, 1/8 part hydrated lime, and two parts graded (80 mesh) aggregate, proportioned by volume. Add aluminum tristearate, calcium stearate, or ammonium stearate to 2 percent of Portland cement by weight.
- .7 Mortar For Glass Block Masonry: CAN/CSA A179, Type S, using the property specification.
- .8 Pointing Mortar For Glass Block Masonry: CAN/CSA A179, Type S, using the property specification.
- .9 Parging mortar: type S to CAN/CSA A179.
- .10 Mortar for foundation walls, manholes, sewers, pavements, walks, patios and other exterior masonry at or below grade: type M based on proportion specifications, CAN/CSA A179.
- .11 Following applies regardless of mortar types and uses specified above:
 - .1 Mortar for calcium silicate brick and concrete brick: type O based on proportion specifications.
 - .2 Mortar for stonework: type N based on proportion specifications.
 - .3 Mortar for grouted reinforced masonry: type S based on proportion specifications.

2.4 MORTAR MIXING

- .1 Use pre-blended, pre-coloured mortar prepackaged under controlled factory conditions. Ingredients batching limitations to be within 1% accuracy.
- .2 Mix mortar ingredients in accordance with CAN/CSA A179 in quantities needed for immediate use.
- .3 Maintain sand uniformly damp immediately before mixing process.
- .4 Add mortar colour and admixtures in accordance with manufacturer's instructions. Provide uniformity of mix and colouration.
- .5 Do not use anti-freeze compounds including calcium chloride or chloride based compounds.
- .6 Do not add air entraining admixture to mortar mix.
- .7 Use a batch type mixer in accordance with CAN/CSA A179.
- .8 Pointing mortar: prehydrate pointing mortar by mixing ingredients dry, then mix again adding just enough water to produce damp unworkable mix that will retain its form when pressed into ball. Allow to stand for not less than 1 hour no more than 2 hours then remix with sufficient water to produce mortar of proper consistency for pointing.
- .9 Re-temper mortar only within two hours of mixing, when water is lost by evaporation.
- .10 Use mortar within 2 hours after mixing at temperatures of 32 degrees C, or 2-1/2 hours at temperatures under 5 degrees C.

2.5 GROUT MIXES

- .1 Bond Beams: grout mix 10 to 12.5 MPa strength at 28 days; mixed in accordance with CAN/CSA A179 fine grout.
- .2 Lintels: grout mix 10 to 12.5 MPa strength at 28 days mixed in accordance with CAN/CSA A179 fine grout.
- .3 Grout: Minimum compressive strength of 12.5 MPa at 28 days. Maximum aggregate size and

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grout slump: CAN/CSA A179.

2.6 GROUT MIXING

- .1 Mix batched and delivered grout in accordance with CAN/CSA-A23.1 transit mixed.
- .2 Mix grout ingredients in quantities needed for immediate use in accordance with CAN/CSA A179 fine grout.
- .3 Add admixtures in accordance with manufacturer's instructions; mix uniformly.
- .4 Do not use calcium chloride or chloride based admixtures.

2.7 MIX TESTS

- .1 Testing Mortar Mix:
 - .1 Test mortar to requirements of Section 01 45 00 - Quality Control, and in accordance with CAN/CSA A179, for mortar based on proportion specification. Test prior to construction and during construction for:
 - .1 Compressive strength.
 - .2 Consistency.
 - .3 Mortar aggregate ratio.
 - .4 Sand/cement ratio.
 - .5 Water content and water/cement ratio.
 - .6 Air content.
 - .7 Splitting tensile strength.
- .2 Testing Grout Mix:
 - .1 Test grout to requirements of Section 01 45 00 - Quality Control, and in accordance with CAN/CSA A179, for grout based on proportion specification. Test prior to construction and during construction for:
 - .1 Compressive strength.
 - .2 Sand/cement ratio.
 - .3 Water content and water/cement ratio.
 - .4 Slump.

3. EXECUTION

3.1 EXAMINATION

- .1 Request inspection of spaces to be grouted.

3.2 PREPARATION

- .1 Apply bonding agent to existing concrete surfaces.
- .2 Plug clean-out holes with block masonry units. Brace masonry for wet grout pressure.

3.3 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.

3.4 CONSTRUCTION

- .1 Do masonry mortar and grout work in accordance with CAN/CSA A179 except where specified otherwise.
- .2 Apply parging in uniform coating not less than total 25 mm thick.

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3.5 MIXING

- .1 All pointing mortar can be mixed using a regular paddle mixer. Only electric motor mixers are permissible. Mixers run on hydrocarbons are not permitted, due to fumes, Clean all mixing boards and mechanical mixing machine between batches.
- .2 Mortar must be weaker than the units it is binding.
- .3 Contractor to appoint one individual to mix mortar, for duration of project. In the event that this individual must be changed, mortar mixing must cease until the new individual is trained, and mortar mix is tested.

3.6 MORTAR PLACEMENT

- .1 Install mortar to manufacturer's instructions.
- .2 Install mortar to requirements of CAN/CSA A179.
- .3 Remove excess mortar from grout spaces.

3.7 GROUT PLACEMENT

- .1 Install grout in accordance with manufacturer's instructions.
- .2 Install grout in accordance with CAN/CSA A179.
- .3 Work grout into masonry cores and cavities to eliminate voids.
- .4 Do not install grout in lifts greater than 400 mm, without consolidating grout by rodding.
- .5 Do not displace reinforcement while placing grout.

3.8 FIELD QUALITY CONTROL

- .1 Test and evaluate mortar prior to construction and during construction in accordance with CAN/CSA A179.
- .2 Test and evaluate grout prior to construction and during construction to CAN/CSA A179; test in conjunction with masonry unit sections specified.

3.9 CLEANING

- .1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.
- .2 Remove droppings and splashings using clean sponge and water.
- .3 Clean masonry with low pressure clean water and soft natural bristle brush.

3.10 PROTECTION OF COMPLETED WORK

- .1 Cover completed and partially completed work not enclosed or sheltered with waterproof covering at end of each work day. Anchor securely in position.

END OF SECTION

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MASONRY ANCHORAGE AND REINFORCING

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1. GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 04 04 99 Masonry Procedures
- .2 Section 04 05 12 Masonry Mortar and Grout
- .3 Section 04 05 23 Masonry Accessories
- .4 Section 04 21 13 Brick Masonry

1.2 REFERENCES

- .1 ASTM International Inc.
 - .1 ASTM A 36/A 36M-05, Standard Specification for Carbon Structural Steel.
 - .2 ASTM A 82/A 82M-05a, Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
 - .3 ASTM A 167-99(R2004), Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
 - .4 ASTM A 307-04, Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength.
 - .5 ASTM A 580/A 580M-06, Standard Specification for Stainless Steel Wire.
 - .6 ASTM A 641/A 641M-03, Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.
 - .7 ASTM-A666-03, Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
- .2 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-A23.1/A23.2-04, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
 - .2 CAN/CSA A179-04, Mortar and Grout for Unit Masonry.
 - .3 CAN/CSA A370-04, Connectors for Masonry.
 - .4 CAN/CSA A371-04, Masonry Construction for Buildings.
 - .5 CAN/CSA G30.18-M92(R2007), Billet-Steel Bars for Concrete Reinforcement.
 - .6 CSA-S304.1-04, Design of Masonry Structures.
 - .7 CSA W186-M1990(R2007), Welding of Reinforcing Bars in Reinforced Concrete Construction.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Provide manufacturer's printed product literature, specifications and datasheets illustrating products to be incorporated into project for specified products.
- .2 Provide Workplace Hazardous Materials Information System (WHMIS) - Material Safety Data Sheets (MSDS) in accordance with Section 01 35 29.06 - Health and Safety Requirements.
- .3 Shop Drawings:
 - .1 Provide shop drawings in accordance with Section 01 33 00 - Submittal Procedures. Provide drawings stamped and signed by professional engineer registered or licensed in Province of Ontario.
 - .2 Clearly indicate bar size, spacing, location, quantities of reinforcement and mesh, with identifying code marks in order to permit correct placement without reference to structural drawings, to "Reinforcing Steel Manual of Standard Practice" by Reinforcing Steel Institute of Canada, First Canadian Edition 1992.
 - .3 Detail placement of reinforcing where special conditions occur.
 - .4 Show walls and beams in full elevation with duct and other openings, and mechanical and electrical conduits/piping indicated. Detail all reinforcing.

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MASONRY ANCHORAGE AND REINFORCING

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- .5 Design and detail lap lengths and reinforcing development lengths to CSA A23.3-94, unless otherwise specified on drawings.
- .6 Provide shop drawings detailing bar bending details, anchorage details lists and placing drawings.
- .7 On placing drawings, indicate sizes, spacing, location and quantities of reinforcement and connectors.
- .4 Samples: Provide samples in accordance with Section 01 33 00 - Submittal Procedures.
- .5 Manufacturer's Instructions: Provide manufacturer's installation instructions.

1.4 QUALITY ASSURANCE

- .1 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
- .2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .3 Pre-Installation Meetings: conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.
- .4 Mock-ups:
 - .1 Construct mock-ups in accordance with Section 01 45 00 - Quality Control:
 - .1 Construct mock-ups panel of anchorage installation and reinforcement.
 - .2 Sample panel: 3000 mm x 3000 mm using proposed procedures, anchorage material, connectors, reinforcement material, and workmanship.

1.5 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, store and handle masonry anchorage and reinforcing materials in accordance with Section 01 61 00 - Common Product Requirements. Deliver reinforcement and connectors, identified in shop and placement drawings.

1.6 FIELD MEASUREMENTS

- .1 Make field measurements necessary to ensure proper fit of members.

2. PRODUCTS

2.1 MATERIALS

- .1 Bar reinforcement: Steel to CAN/CSA A371 and CAN/CSA G30.18.
- .2 Connectors: to CAN/CSA A370 and CSA-S304.1.
- .3 Corrosion protection: to CSA-S304.1, galvanized to CSA-S304.1 and CAN/CSA A370.
- .4 Fasteners: installed post-construction:
 - .1 Screw Shields and Plugs: nylon, vibration-resistant, chemical-resistant, water-resistant, install in mortar joints.
 - .2 Bolts and Screws: size and type to suit application, locate where indicated.
 - .3 Nails: case-hardened cut or spiral nails, size and type to suit fastening application.
 - .4 Powder-Driven Fasteners: pin styles and lengths to suit fastening application in accordance with manufacturers use, load and hold recommendations.
 - .5 Adhesives: epoxies, mastics and contact cements for fastening applications, use in accordance with manufacturers' recommendations.
- .5 Ties: hot dip galvanized to CAN/CSA A370 Table 5.2 steel finish.
- .6 Horizontal reinforcing: truss type, as manufactured by Blok-Lok. See Structural Drawings for sizes. Rod extension to suit the wall cavity. Provide complete with "U" shaped 4.76 mm dia. double adjustable tie.
- .7 Adjustable steel stud veneer anchors: Model # 10-18 as manufactured by Bailey Metal Products Ltd., sizes to suit studs.

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- .8 Horizontal and vertical reinforcing: deformed bars conforming to CSA G30 Series, $F_y=58$ KSI(400 MPa).
- .9 Miscellaneous individual brick masonry veneer ties: hot dipped, galvanized, straps, 22 mm wide x 5 mm thick.
- .10 Epoxy adhesive system: Hilti HIT Adhesive Anchoring System to suit the application.

2.2 FABRICATION

- .1 Fabricate reinforcing in accordance with CAN/CSA-A23.1 and Reinforcing Steel Manual of Standard Practice by the Reinforcing Steel Institute of Canada.
- .2 Fabricate connectors in accordance with CAN/CSA A370.
- .3 Weld reinforcement in accordance with CSA W186.
- .4 Ship reinforcement and connectors, clearly identified in accordance with drawings.

2.3 SOURCE QUALITY CONTROL

- .1 Provide certified copy of mill test report of reinforcement steel and connectors, showing physical and chemical analysis, minimum 3 weeks prior to commencing reinforcement work.

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 PREPARATION

- .1 Direct and coordinate placement of metal anchors for masonry supplied to other Sections.

3.3 INSTALLATION

- .1 Supply and install masonry connectors and reinforcement in accordance with CAN/CSA A370, CAN/CSA A371, CAN/CSA-A23.1 and CSA-S304.1 unless indicated otherwise.
- .2 Prior to placing concrete, mortar or grout, obtain Consultant's approval of placement of reinforcement and connectors.
- .3 Supply and install additional reinforcement to masonry as indicated.

3.4 BONDING AND TYING

- .1 Bond walls of two or more wythes using metal connectors in accordance with CSA-S304.1, CAN/CSA A371 and as indicated.
- .2 Tie masonry veneer to backing in accordance with NBC, CSA-S304.1, CAN/CSA A371 and as indicated.
- .3 Where individual ties are required for lateral support of masonry veneer to block back-up, ties shall be galvanized corrugated straps 22 mm wide x 5 mm, spaced at 600 mm c/c vertically and 400 mm c/c horizontally.
- .4 At locations of masonry veneer over steel stud walls, install adjustable veneer anchors type.
- .5 Install unit, adjustable, single wythe and multiple wythe joint reinforcement in accordance with CAN/CSA A370 and CAN/CSA A371 and manufacturer's instructions.
 - .1 Bond walls of two or more wythes using metal connectors in accordance with CAN/CSA A371 and as indicated.
 - .2 Install horizontal joint reinforcement maximum 400 mm on centre.
 - .3 Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 400 mm each side of opening.

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- .4 Place joint reinforcement continuous in first and second joint below top of walls.
- .5 Lap joint reinforcement ends minimum 150 mm.
- .6 Connect stack bonded unit and joint corners and intersections with strap anchors 400 mm on centre.

3.5 HORIZONTAL REINFORCING

- .1 In all interior non-loadbearing block walls, install truss type horizontal reinforcing at spacings and size indicated on the structural drawings. The width of trusses shall be 50 mm less than the width of blocks. For example, for a 150 mm block wall use 100 mm wide trusses; for 200 mm use 150 mm; etc. Provide prefabricated corner units at corners and intersections. Lap 150 mm at splices. Overlap reinforcing minimum of 150 mm to ensure continuity. Cut prefabricated corners as shown on manufacturer's details.

3.6 EARTHQUAKE REINFORCEMENT

- .1 Reinforce loadbearing masonry in accordance with OBC and as indicated on the drawings.
- .2 Reinforce the following masonry elements in accordance with CAN3-S304-M84 and as indicated on structural drawings and specifications:
 - .1 Loadbearing and lateral load-resisting masonry
 - .2 Masonry enclosing elevator shafts and stairways
 - .3 Masonry used as exterior cladding
 - .4 Masonry partitions

3.7 REINFORCED LINTELS AND BOND BEAMS

- .1 Reinforce masonry beams, masonry lintels and bond beams as indicated.
- .2 Place and grout reinforcement in accordance with CSA-S304.1, CAN/CSA A371, and CAN/CSA A179.
- .3 Support and position reinforcing bars in accordance with CAN/CSA A371.

3.8 GROUTING

- .1 Grout masonry in accordance with CSA-S304.1, CAN/CSA A371 and CAN/CSA A179 and as indicated.

3.9 ANCHORS

- .1 Supply and install metal anchors in accordance with CAN/CSA A370 and CAN/CSA A371 and as indicated.

3.10 LATERAL SUPPORT AND ANCHORAGE

- .1 Supply and install lateral support and anchorage in accordance with CSA-S304.1 and as indicated.

3.11 MOVEMENT JOINTS

- .1 Reinforcement will not be continuous across movement joints unless otherwise indicated.
- .2 Stop reinforcing 25 mm short of each side of control joints unless otherwise indicated.

3.12 FIELD BENDING

- .1 Do not field bend reinforcement and connectors except if authorized by Consultant.
- .2 When field bending is authorized, bend without heat, applying a slow and steady pressure.
- .3 Replace bars and connectors which develop cracks or splits.

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3.13 FIELD QUALITY CONTROL

- .1 Site inspections.
- .2 Obtain Structural Engineer's approval of placement of reinforcement and connectors, prior to placing mortar and grout.

3.14 FIELD TOUCH-UP

- .1 Touch up damaged and cut ends of epoxy coated or galvanized reinforcement steel and connectors with compatible finish to provide continuous coating.

3.15 CLEANING

- .1 Clean in accordance with Section 01 74 11 - Cleaning. Remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION

Section 04 05 23

MASONRY ACCESSORIES

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1. GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 04 04 99 Masonry Procedures
- .2 Section 04 05 12 Masonry Mortar and Grout
- .3 Section 04 05 19 Masonry Anchorage and Reinforcing
- .4 Section 04 21 13 Brick Masonry

1.2 REFERENCES

- .1 ASTM International Inc.
 - .1 ASTM D 2240-05, Standard Test Method for Rubber Property - Durometer Hardness.
- .2 Canadian Standards Association (CSA International)
 - .1 CAN/CSA A371-04, Masonry Construction for Buildings.
 - .2 CAN/CSA-ISO 14021-00(R2204), Environmental Labels and Declarations - Self Declared Environmental Claims (Type II Environmental Labelling).
- .3 South Coast Air Quality Management District (SCAQMD), California State (SCAQMD)
 - .1 SCAQMD Rule 1168-05, Adhesives and Sealants Applications.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data: Provide manufacturer's printed product literature, specifications and datasheets. Include product characteristics, performance criteria, and limitations.
- .3 Shop Drawings: Provide shop drawings in accordance with Section 01 33 00 - Submittal Procedures. Provide drawings stamped and signed by professional engineer registered or licensed in Province of Ontario. Shop drawings consist of flashing and installation details. Indicate sizes, spacing, location and quantities of fasteners.
- .4 Samples: Provide masonry accessory samples in accordance with Section 01 33 00 – Submittal Procedures.

1.4 QUALITY ASSURANCE

- .1 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
- .2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .3 Pre-Installation Meetings: conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.
- .4 Mock-ups:
 - .1 Construct mock-ups in accordance with Section 01 45 00 - Quality Control:
 - .1 Construct mock-ups panel of anchorage installation and reinforcement.
 - .2 Sample panel: 3000 mm x 3000 mm using proposed procedures, anchorage material, connectors, reinforcement material, and workmanship.

1.5 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, store and handle masonry accessories in accordance with, Section 01 61 00 – Common Product Requirements supplemented as follows:
 - .1 Keep fillers and adhesives dry, protected against dampness, and freezing.
 - .2 Store packaged materials off ground and in accordance with manufacturer's written instructions.

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MASONRY ACCESSORIES

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1.6 FIELD MEASUREMENTS

- .1 Make field measurements necessary to ensure proper fit of members.

2. PRODUCTS

2.1 MATERIALS

- .1 Movement joint filler: purpose-made elastomer, outsized 30% to 50%, 20 durometer hardness to ASTM D 2240 of size and shape indicated. Use low VOC products in compliance with the SCAQMD Rule 1168.
- .2 Lap adhesive: recommended by masonry flashing manufacturer. Use low VOC products in compliance with the SCAQMD Rule 1168.
- .3 Mechanical fasteners: recommended by flashing manufacturer to suit project requirements.
- .4 Masonry flashing: Typical, Blueskin AG, as manufactured by Bakor.
- .5 Continuous Metal Through-Wall Flashing: exterior wall cavities, 24 gauge (0.61 mm) prefinished steel.
- .6 Fire Stop Material: "Fire Stop" as manufactured by AA/D Distributors.
- .7 Mortar Dropping Control Devices: polyethylene net, 90% open mesh, 250 mm high, 25 mm wide, mortar net, as manufactured by Mortar Net U.S.A. Ltd.
- .8 Brick vents:
 - .1 Material: aluminum, 100 mm deep frame.
 - .2 Blades: aluminum, overlapping, 45 degree angle with maximum free area 39%.
 - .3 Size: as indicated on the drawings (minimum 200x600mm).
 - .4 Provide mesh aluminum insect screen.
 - .5 Finish frame and blades: integral colour anodize, colour to be selected at later date.

2.2 MOISTURE CONTROL

- .1 Weep Hole Vents: PVC, colour to be selected at the later date.
- .2 Cell vents: polypropylene plastic, honeycomb design. Size: 9.5 mm x 85.7 mm x 101.6 mm.
- .3 Mortar diverters: shaped and sized to suit cavity spaces.
- .4 Grout Screens: 6 mm square monofilament screen is fabricated from high-strength, noncorrosive polypropylene polymers to isolate flow of grout.

3. EXECUTION

3.1 APPLICATION

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

3.2 INSTALLATION: MATERIALS

- .1 Install continuous movement joint fillers in movement joints at locations indicated on drawings.
- .2 Lap adhesive: apply adhesive to flashing lap joints.
- .3 Mechanical fasteners: install fasteners to suit application and in accordance with manufacturer's written installation instructions.
- .4 Reglets: install reglets at locations indicated on drawings.
- .5 Brick vents: install brick vents

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3.3 INSTALLATION: MOISTURE CONTROL

- .1 Provide weep hole vents in vertical joints immediately over flashings, in exterior wythes of cavity wall and masonry veneer wall construction, at maximum horizontal spacing of 600 mm on centre.
- .2 Mortar dropping control devices: install purpose made mesh devices in base of all masonry cavities, with size and shape to suit purpose and function.
- .3 Grout screens: install purpose made diverters in cavities where indicated and as directed, size and shape to suit purpose and function.

3.4 INSTALLATION: FLASHINGS

- .1 Build in flashings in masonry in accordance with CAN/CSA A371.
 - .1 Install flashings under exterior masonry bearing on foundation walls, slabs, shelf angles, and steel angles over openings, and at base of cavity wall and where cavity is interrupted by horizontal members or supports and as shown on drawings. Install flashings under weep hole courses and as indicated.
 - .2 In cavity walls and veneered walls, carry flashings from front edge of exterior masonry, under outer wythe, then up backing not less than 150 mm, and as follows:
 - .1 For masonry backing embed or bond flashing 25 mm in joint.
 - .2 For concrete backing, insert or bond flashing into reglets.
 - .3 For wood frame backing, staple flashing to walls behind water resistive paper, and lap joints.
 - .4 For gypsum board and glass fibre faced sheathing backing, bond to wall using manufacturer's recommended adhesive.
 - .3 Lap joints 150 mm and seal with adhesive.
- .2 Form flashing (end dams) at lintels, sills and wall ends to prevent water from travelling horizontally past flashing ends.
- .3 Install vertical flashing where outer veneer returns at window or door jambs, to prevent contact of veneer with inner wall.

3.5 CLEANING

- .1 Clean in accordance with Section 01 74 11 - Cleaning. Remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION

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1. GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 04 04 99 Masonry Procedures
- .2 Section 04 05 12 Masonry Mortar and Grout
- .3 Section 04 05 19 Masonry Anchorage and Reinforcing
- .4 Section 04 05 23 Masonry Accessories

1.2 REFERENCES

- .1 ASTM International Inc.
- .1 ASTM C 73-05, Standard Specification for Calcium Silicate Brick (Sand-Lime Brick).
- .2 ASTM C 216-07a, Standard Specification for, Facing Brick (Solid Masonry Units Made of Clay or Shale).
- .2 Brick Industry Association (BIA): Technical Note No. 20-2006, Cleaning Brick Work.
- .3 Canadian Standards Association (CSA International)
- .1 CAN/CSA A82-06, Fired Masonry Brick Made From Clay or Shale).
- .2 CAN/CSA-A165 Series-2004, CSA Standards on Concrete Masonry Units.
- .3 CAN/CSA A371-04, Masonry Construction for Buildings.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data: Provide manufacturer's printed product literature, specifications and datasheets. Include product characteristics, performance criteria, and limitations.
- .3 Shop Drawings: Provide shop drawings in accordance with Section 01 33 00 - Submittal Procedures. Provide drawings stamped and signed by professional engineer registered or licensed in Province of Ontario. Shop drawings consist of flashing and installation details. Indicate sizes, spacing, location and quantities of fasteners.
- .4 Samples: Provide masonry accessory samples in accordance with Section 01 33 00 – Submittal Procedures.

1.4 QUALITY ASSURANCE

- .1 Test and Evaluation Reports: submit certified test
- .2 Pre-Installation Meetings: conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.
- .3 Mock-ups: Construct mock-ups in accordance with Section 01 45 00 - Quality Control. Construct mock-up panel of exterior and/or interior brick construction 1200 x 1800 mm.
- .4 Delivery, Storage, and Handling: Deliver, store and handle brick unit masonry in accordance with Section 01 61 00 - Common Product Requirements.

1.5 SITE CONDITIONS

- .1 Ambient Conditions: assemble and erect components only when temperature is above 4 degrees C.

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2. PRODUCTS

2.1 FACE BRICK

- .1 Burned clay brick: shall conform to CAN/CSA A82.1-M87
 - .1 Type: FBX Grade SW
 - .2 Compressive strength: 16 MPA minimum
 - .3 Size: metric modular brick and special shapes as required
 - .4 Colour and texture: shall match approved sample in Architect's office
 - .5 Acceptable material: Metric Modular Brick by Hanson Brick or equivalent.
 - .6 Brick colour and texture: Brookview Matt. (TO MATCH EXISTING DAYCARE)

3. EXECUTION

3.1 EXAMINATION

- .1 Verify surfaces and conditions are ready to accept work of this Section.
- .2 Commencing installation means acceptance of existing substrates.

3.2 PREPARATION

- .1 Protect adjacent finished materials from damage due to masonry work.

3.3 APPLICATION

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

3.4 INSTALLATION

- .1 Construction to conform to CAN/CSA A371.
- .2 Bond: running stretcher or as indicated on drawings.
- .3 Coursing height: 200 mm for three (3) bricks and three (3) joints.
- .4 Jointing: concave where exposed or where paint or similar thin finish coating is specified.
- .5 Mixing and blending: mix units within each pallet and with other pallets to ensure uniform blend of colour and texture. Remove black flashed units.
- .6 Carry up all walls in a uniform manner without any one wall raised more than 1200 mm above another at one time.
- .7 Except where noted otherwise, set masonry units in running bond and tooth bond all intersections of walls and partitions. Lay masonry with voids and webs aligned with the block below.
- .8 Where brick and SMU work are to be exposed, courses shall be level, and alternate vertical joints shall be aligned. Joints shall be slightly tooled concave. Use stainless steel jointing tools.
- .9 The maximum joint thickness shall be 10 mm. Where the specified horizontal reinforcing will cause the joint thickness to exceed 10 mm cut the webs of the masonry unit to accommodate the reinforcing and to achieve a maximum joint thickness of 10 mm.
- .10 Machine cut with a carborundum saw all exposed masonry units which are adjusted in size.
- .11 Where shown on the drawings or called for in the Specifications, build-in reglets to receive flashings. Leave reglet free of mortar, caulk.
- .12 Cut and make good all openings or chases required by other trades. Where conduits or pipes occur in masonry work, take special care to ensure that final finish of masonry is presentable; secure the cooperation of other trades to ensure this result.
- .13 Provide steel angle lintels at all openings in 90 mm masonry veneers unless shown otherwise on the drawings. Minimum L 75x75x10mm (200mm beyond each jamb).
- .14 Provide temporary bracing of walls during and after erection until permanent lateral support is

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- in place.
- .15 Clean unglazed clay masonry as work progresses. Upon completion of masonry, fill holes and cracks, remove loose mortar and repair defective work.

3.5 MORTAR COLOURS

- .1 Colour will be selected by the Architect at a later date.

3.6 CLEANING

- .1 Clean in accordance with Section 01 74 11 - Cleaning.
- .2 Perform cleaning as soon as possible after installation to remove construction and accumulated environmental dirt.
- .3 Clean 10 m2 of masonry wall designated by Consultant as directed below and leave for one week. If no harmful effects appear and after mortar has set and cured, after approval by Architect, protect windows, sills, doors, trim and other work, and clean brick masonry as follows.
- .1 Remove large particles with wood paddles without damaging surface. Saturate masonry with clean water and flush off loose mortar and dirt.
- .2 Scrub with solution of 25 mL trisodium phosphate and 25 mL household detergent dissolved in 1 L of clean water using stiff fibre brushes, then clean off immediately with clean water using hose. Alternatively, use proprietary compound recommended by brick masonry manufacturer in accordance with manufacturer's directions.
- .3 Repeat cleaning process as often as necessary to remove mortar and other stains.
- .4 Use acid solution treatment for difficult to clean masonry as described in Technical Note No.20 by the Brick Industry Association.

3.7 DAMAGE DURING INSTALLATION

- .1 Do not install defective units. Replace any units damaged by contractor at contractor's expense. All damaged units not reported as damaged upon inspection at time of delivery are presumed to have been damaged by contractor or improper job site handling. Do not allow units to be mishandled. Keep cap cover on all units until installed. Contractor, at his expense, shall remove any scratches, tar or dirt caused by mishandling.

END OF SECTION

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Part 1 General

1.1 SUMMARY

- .1 Section Includes
 - .1 Labour, Products, equipment, and services necessary to complete the work of this Section.
- .2 Related Requirements
 - .1 Section 05 31 00 - Steel Decking.

1.2 REFERENCES

- .1 Reference standards: Perform the work of this Section in conformance with the requirements of the following standards:
 - .1 American Society for Testing and Materials International, (ASTM)
 - .1 ASTM A36/A36M-19, Standard Specification for Carbon Structural Steel.
 - .2 ASTM A53 / A53M – 12, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
 - .3 ASTM A123 / A123M – 13, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
 - .4 ASTM A193/A193M-23, Specification for Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service or High Pressure Service and Other Special Purpose Applications.
 - .5 ASTM A307-21, Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.
 - .6 ASTM A500 / A500M - 21a, Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
 - .7 ASTM A1085 / A1085M – 15, Standard Specification for Cold-Formed Welded Carbon Steel Hollow Structural Sections (HSS)
 - .8 ASTM F3125 / F3125M - 22, Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength.
 - .2 Canadian Institute of Steel Construction (CISC)/Canadian Paint Manufacturer's Association (CPMA)
 - .1 CISC/CPMA 1-73a, Quick-Drying, One-Coat Paint for Use on Structural Steel.
 - .2 CISC/CPMA 2-75, Quick-Drying, Primer for use on Structural Steel.
 - .3 CISC Code of Standard Practice – 8th Edition (2015)
 - .3 Canadian Standards Association (CSA International)
 - .1 CSA G40.20/G40.21-13 (R2018), General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

- .2 CSA G164-M92, Hot Dip Galvanizing of Irregularly Shaped Articles.
- .3 CSA S16:14, Design of Steel Structures.
- .4 CSA S136-16, North American Specification for the design of Cold-Formed Steel Structural Members.
- .5 CSA W47.1:19, Certification of Companies for Fusion Welding of Steel Structures.
- .6 CSA W48:23, Filler Metals and Allied Materials for Metal Arc Welding.
- .7 CSA W55.3-08(R2018), Certification of Companies for Resistance Welding of Steel and Aluminum.
- .8 CSA W59-18, Welded Steel Construction.
- .4 The Society for Protective Coatings (SSPC)
 - .1 SSPC.SP 1, Solvent Cleaning
 - .2 SSPC.SP 2, Hand Tool Cleaning
 - .3 SSPC.SP 3, Power Tool Cleaning
 - .4 SSPC.SP 6, Commercial Blast Cleaning
 - .5 SSPC.SP 7, Brush-off Blast Cleaning
 - .6 SSPC.SP 10, Near-white Blast Cleaning
- .2 Work of this Section to conform to CSA S16 except as noted herein. Where specific requirements are noted herein, they are in addition to the requirements of CSA S16 and do not supersede them unless specifically stated.

1.3 DESIGN AND DETAILING REQUIREMENTS

- .1 Design details and connections in accordance with requirements of CSA S16 and CSA S136 (with CSA-S136.1) to resist forces, moments, shears and allow for movements indicated.
- .2 Select framed beam shear connections from an industry accepted publication such as "Handbook of the Canadian Institute of Steel Construction" when connection for shear only (standard connection) is required.
- .3 Beam connections shall be adequate to resist the reactions and/or loading indicated on the drawings.
- .4 Where loading information has not been provided for design of shear connections for non-composite construction, select or design connections to support reaction from maximum uniformly distributed load that can be safely supported by beam in bending, provided no point loads act on beam.
- .5 Where loading information has not been provided for design of shear connections for composite construction, the minimum end connection shall be such as to resist the greater of that required for non-composite construction or the reaction resulting from a uniformly distributed load causing the equivalent of the factored moment resistance as tabulated in the CISC Handbook, assuming a 100% shear connection and with the depth of steel deck and/or slab shown on the drawings.
- .6 Where steel is exposed in the finish work, provide neat details and connections. Avoid excessive gaps and protrusions in forming connections.

- .7 Provide adjustable connections for all lintel angles and head supports attached to the structural frame to allow for frame deflections and tolerances.
- .8 Use friction type high strength bolts for connections of bracing members required to resist effects of lateral loads. Provide tension adjustment hardware at rod type bracing.
- .9 Provide at least one stiffener plate each side of web of beams continuous over columns unless another arrangement of stiffeners is shown on the drawings.
- .10 Do not permit connections to encroach on the clearance lines required for the installation work of other sections.
- .11 Bolted connections shall be bearing-type unless otherwise shown on the structural design drawings. Use of oversize holes shall be subject to approval and such connections shall be detailed as slip-critical.
- .12 Minimum thickness of material for exterior exposures – 5 mm (3/16").
- .13 Where galvanized steel members are exposed to weather, connections are to be bolted to ensure minimum damage to galvanizing. Contact faces of bolted connections are also to be galvanized and connection capacities designed accordingly.

1.4 SUBMITTALS

- .1 Submit all submittals, including fabrication and erection documents and materials list, in accordance with Division 01.
- .2 Source quality control submittals
 - .1 Submit 5 copies of mill test reports 4 weeks prior to fabrication of structural steel.
 - .1 Mill test reports to show chemical and physical properties and other details of steel to be incorporated in project.
 - .2 Provide mill test reports certified by metallurgists qualified to practice in province of Ontario, Canada.
 - .3 Provide structural steel Fabricator's affidavit stating that materials and products used in fabrication conform to applicable material and products standards specified and indicated.
- .3 Shop Drawings
 - .1 Verify site conditions and dimensions on site before shop drawing preparation. Show all on shop drawings.
 - .2 Shop drawings must be original. Reproduction of Consultants' design drawings is not acceptable.
 - .3 Fabrication drawings:
 - .1 Submit shop details, fully detailed and dimensioned, with complete information necessary for fabrication without reference to structural drawings.
 - .2 Submit typical details of connections and any special connections for review before preparation of shop drawings.

- .3 Fabrication drawings to be stamped and signed by a Professional Engineer licensed in the Province of Ontario and experienced in design and installation of the Work of this Section.
- .4 Erection drawings:
 - .1 Submit details and information necessary for assembly and erection purposes including:
 - .1 Description of methods.
 - .2 Sequence of erection.
 - .3 Type of equipment used in erection.
 - .4 Temporary bracings.
 - .5 Connections.
 - .2 Erection drawings to be stamped and signed by a Professional Engineer licensed in the Province of Ontario and experienced in design and installation of the Work of this Section.
- .4 Delegated design submittals:
 - .1 Submit sketches and design calculations stamped and signed by qualified professional engineer licensed in Province of Ontario, Canada for non standard connections.
 - .1 Submit sample connection calculations for review, including the following:
 - .1 Typical shear connections.
 - .2 Typical shear connections with axial load.
 - .3 Typical connections for lateral system.
 - .4 Typical tension connections.
 - .5 Any other calculations requested by the consultant.
 - .2 Confirm requirements with the Consultant prior to submitting shop drawings.
 - .2 Submit loads used in connection design without reference to structural drawings. Clearly indicated if loads are factored or otherwise amplified for connection design. At minimum, submit all loads used in design of all lateral connections and tension connections, as well as a representative sample of all other connection types. Confirm requirements with the consultant prior to submitting shop drawings.

1.5 QUALITY ASSURANCE

- .1 Licensed Professionals:
 - .1 Engage a Professional Engineer licensed in the Province of Ontario and experienced in design and installation of the Work of this Section to:
 - .1 Prepare or directly supervise the design, execution, operations, procedures, and preparation of shop drawings.
 - .2 Check all drawings and calculations before submission.

- .3 Certify that checks have been made by sealing and signing shop drawings and calculations.
- .2 Inspection and Testing Company shall be qualified under CSA W178.
- .3 Welding inspectors shall be certified by Canadian Welding Bureau in Category (a), Buildings, to CSA W178.2.
- .4 Companies to be certified under Division 1 or 2.1 of CSA W47.1 for fusion welding of steel structures and/or CSA W55.3 for resistance welding of structural components.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Handle and store steel materials at the job site in such a manner as to cause no damage to other materials, to existing buildings, to property or to the new structure.
- .2 Handle structural steel so as to avoid distortion.

Part 2 Products

2.1 MATERIALS

- .1 Structural steel: to CSA G40.20/G40.21 Grade 350W (Fy=350 MPa) or ASTM A992 (Fy=345 MPa).
- .2 Cold-formed steel: to material standard as per in CSA S136.
- .3 Square and Rectangular HSS Sections: to CSA G40.20/21 grade 350W (Fy = 350 MPa) class C or H, ASTM A500 grade C (Fy = 345 MPa) or ASTM A1085 (Fy = 345 MPa)
- .4 Circular HSS Sections: to CSA G40.20/21 grade 350W (Fy = 350 MPa) class C or H, ASTM A500 grade C (Fy = 317 MPa) or ASTM A1085 (Fy = 345 MPa)
- .5 Anchor rods: CSA G40.21 grade 300W, or ASTM 1554 grade 36 or 55, ASTM A307.
- .6 Bolts, nuts and washers: to ASTM A 325M, grade A325. Where in contact with galvanized structural steel, use galvanized bolts, nuts and washers.
- .7 Headed studs: to CSA W59, Type B, min. Fy=350 MPa
- .8 Welding materials: to CSA W59 and certified by Canadian Welding Bureau.
- .9 Shop paint for interior exposures not requiring more than 6 months of protection and not receiving top coating: quick-drying paint CISC/CPMA standard 1-73a.
- .10 Shop primer for interior exposure not requiring more than 12 months of protection and with or without a top coating: Quick-drying one-coat primer CISC/CPMA standard 2-75. Coordinate primer with top coat.
- .11 Zinc - rich paint: CGSB 1-GP-181, minimum dry thickness of each coat - three mils.
- .12 Hot dip galvanizing: galvanize steel, where indicated, to CSA-G164, minimum zinc coating of 0.75 kg/m² (0.15 lb//ft²).

2.2 FABRICATION

- .1 Fabricate structural steel in accordance with CSA S16 and CSA S136 and in accordance with reviewed shop drawings.
- .2 Provide holes in top and bottom flanges for attachment of wood nailers, as required.
- .3 Hot dip galvanize after fabrication.

2.3 FINISHES

- .1 Clean, prepare surfaces and shop prime structural steel in accordance with CSA S16 and CSA S136.
- .2 Surface cleaning and preparation shall be in conformance with the following:
 - .1 Clean all members to SSPC-SP 1 – Solvent Cleaning, Remove loose mill scale, rust, oil, dirt and foreign matter using any suitable method.
 - .2 For members not exposed in the final condition receiving shop primer or paint clean steel to SSPC-SP 3 Power Tool Cleaning.
 - .3 For members exposed in the final condition receiving shop primer or paint clean steel to SSPC-SP 6 Commercial Blast Cleaning.
 - .4 For members receiving intumescent coating clean steel to SSPC-SP 6 Commercial Blast Cleaning.
 - .5 For members to be hot dip galvanized clean steel to SSPC-SP 6 Commercial Blast Cleaning.
 - .6 For members receiving zinc-rich coating clean steel to SSPC-SP 6 Commercial Blast Cleaning.
- .3 Apply one coat of primer in shop to steel surfaces to achieve minimum dry film thickness of 1.5 to 2.0 mils, except:
 - .1 Interior Steel: Concealed
 - .1 Primer: One coat iron oxide type: to CAN/CGSB-1.40-M89 (or equivalent).
 - .2 Interior and Exterior Steel: Exposed
 - .1 Primer: One coat applied in accordance with architectural finish schedules.
 - .2 Loose Lintels/Shelf Angles/Masonry Support Plates: Hot dipped galvanized.
 - .3 Exterior Steel not noted in architectural finish schedules: Hot dipped galvanized.
 - .4 Apply paint under cover, on dry surfaces when surface and air temperatures are above 5 degrees C.
 - .5 Maintain dry condition and 5 degrees C minimum temperature until paint is thoroughly dry.
 - .6 Strip paint from bolts, nuts, sharp edges and corners before prime coat is dry.

- .7 Primer for steel to receive intumescent paint to be compatible with finish paint specified.
- .3 Primer for steel to receive intumescent fireproofing: Determined to be acceptable based on adhesion and compatibility characteristics under laboratory conditions in accordance with ASTM D3359-09e2, Method A and/or ASTM D4541-09e1, and approved by manufacturer of Intumescent fireproofing to be applied.
- .4 Surfaces to receive intumescent fireproofing shall be free and clean of dust, grease, or other foreign matter. Existing coatings (except compatible coating manufacturer approved primer), mill scale or surface contaminants shall be removed.
- .5 Do not apply primer to the following surfaces:
 - .1 Surfaces encased in or in contact with cast-in-place concrete including top flanges of beams supporting slabs.
 - .2 Surfaces and edges to be field welded for a distance of 50 mm from the joint.
 - .3 Contact surfaces of friction type shear connections assembled with high-strength bolts.
 - .4 Top flanges of composite beams with field welded shear connectors.
 - .5 Members for which zinc-rich paint or galvanizing is specified.
 - .6 Surfaces fireproofed by spray-applied fire-resistant material.
- .4 Apply one shop coat and one field coat of coal tar protective coating to columns, base plates and anchor bolts in contact with soil where indicated on drawings. Apply minimum 15 mil dry thickness each coat. Protect coating with protection board, rigid insulation, or otherwise, to prevent damage to coating during backfilling.
- .5 Apply touch-up paint after erection to all areas which have been missed, scraped or chipped using the same paint as the shop coat or primer.

2.4 TESTING AND INSPECTIONS

- .1 Inspection and testing of materials and shop fabrication of work of this Section, and field quality control specified elsewhere in this Section, will be performed by an Inspection and Testing Company.
- .2 Do not commence fabrication until details of inspection have been agreed upon in writing with the Agency.
- .3 Inspection and Testing Company shall check:
 - .1 Mill Inspection: Check that materials conform to specified standards. Mill test reports, properly correlated to materials, will be accepted in lieu of physical tests.
 - .2 Check welders' CWB certification and review welding procedures.
 - .3 Perform shop and field inspection and testing as outlined in 3.7.

Part 3 Execution

3.1 GENERAL

- .1 Structural steel work: in accordance with CSA S16 and CSA S136.
- .2 Welding: in accordance with CSA W59

3.2 EXAMINATION

- .1 Verification of Conditions
 - .1 Verify dimensions and condition of existing work, report discrepancies and potential problem areas to Consultant for direction before commencing fabrication.

3.3 MARKINGS

- .1 Mark materials in accordance with CSA G40.20/G40.21. Do not use die stamping. If steel is to be left in unpainted condition, place marking at locations not visible from exterior after erection.
- .2 Match marking: shop mark bearing assemblies and splices for fit and match.

3.4 ERECTION

- .1 Erect structural steel, as indicated and in accordance with CSA S16 and CSA S136 in accordance with reviewed erection drawings.
- .2 Field cutting or altering structural members is not permitted unless approved by Consultant in writing.
- .3 Use erection techniques and equipment that will not mark or abrade surfaces of exposed structural steel.
- .4 Repair all small bends and kinks received during transportation before the members are erected. Replace, as directed, members seriously damaged.
- .5 Make adequate provision for all loads acting on the structure during erection. Provide temporary bracing to keep the structure stable, plumb and in true alignment during construction. Any bracing members or connections shown on the plans are those required for the finished structure, and may not be sufficient for erection purposes. Such additional temporary bracing as may be required is the responsibility of the contractor. Temporary bracing shall remain in place until concrete slabs, masonry etc., required for final stability are completed.
- .6 Set column base plates on levelling screws or on steel shims to the required elevation ready for grouting. Locate steel shims at the corners of the base plate to permit full grouting.
- .7 The use of levelling plates for beams or columns is not permitted.
- .8 Check anchor bolt layout before erection and notify Consultant of any discrepancies.

- .9 Install bolts which are not pre-tensioned to be snug tight. Use turn-of-nut method for bolts in pre-tensioned connections. Finger tighten bolts to a snug fit and burr threads for slotted connections.
- .10 Report failure of material to fit together properly and report to obtain approval for corrective measures.
- .11 Fix all lintel angles and head supports to the steel frame only after nearly all the dead loads have been put on the steel frame, and immediately prior to the installation of the windows, door or screens below or walls that they support.
- .12 Structural drawings do not generally show loose lintels required. Refer to general notes on the drawings.
- .13 Bolt together multiple angle lintels. Provide spacers where separated. Provide steel spacers where angle seats are at different elevations.
- .14 Connect ends of suspended lintels to the structure and/or extend into masonry to provide adequate bearing and restraint.
- .15 Provide diagonal or cantilevered support angles at sides of columns where required for bearing support of interrupted deck.
- .16 Provide dissimilar metal separators between aluminium members and structural steel.
- .17 Clean with mechanical brush and touch up shop primer to bolts, rivets, welds and burned or scratched surfaces at completion of erection.
- .18 Continuously seal members by continuous welds where indicated. Grind smooth.

3.5 FIELD QUALITY CONTROL

- .1 Inspection and testing of materials and workmanship will be carried out by Inspection and Testing Company.
- .2 Provide safe access and working areas for testing on site, as required by testing agency and as authorized by Consultant.
- .3 Submit test reports to Consultant within 1 week of completion of inspection.
- .4 Payment of costs of tests as specified in Division 01.
- .5 Inspection and Testing Company shall:
 - .1 Verify that structural steel is fabricated in accordance with shop drawings.
 - .2 Verify that specified fabrication, welding, cleaning and painting procedures are followed.
 - .3 Inspect erection and fit-up, including placing, plumbing, levelling and temporary bracing and conformance with specified tolerances.
 - .4 Inspect bolted connections.
 - .5 Inspect welded joints, including slag removal.
 - .6 Provide general inspection of field cutting and alterations.
 - .7 Provide general inspection of shop coating touch-up.

- .8 Inspect zinc primer and zinc-rich paint, including surface preparation and coating thickness.
- .9 For surfaces inaccessible for cleaning and painting after assembly verify that these are treated before assembly.
- .10 For surfaces painted with zinc-rich paint or zinc primer, verify that specified surface preparation is followed, and specified paint thickness is applied.
- .11 Visually check of all welds at plate girders, all butt welds, all welds in moment connections, all welds at crane girders, all welds of roof anchors to structure, 50% of welds in hanger connections and 20% of all other welds for: size, length and profile, joint preparation, fit up and alignment, penetration and fusion, slag removal, distortion, porosity and cracks.
- .12 Be present during the performance of welding of 10% of moment connections and 10% of butt welds in direct tension.
- .13 Check 10% of columns and 10% of beams for plumbness using instrumentation.
- .14 Perform pull test on 5% of post installed anchors for 200% of allowable tensile load as listed in manufacturer's data sheet.
- .15 Carry out non-destructive testing of welded connections chosen at random as follows:
 - .1 10% of moment connections involving use of fillet welds, by Magnetic Particle Inspection.
 - .2 All moment connections and all connections in direct tension involving use of Full Penetration Groove welds, by ultrasonic testing.
 - .3 Where moments are transferred by either fillet welds or groove welds into end plates in "T" joint configurations, examine base metal for lamellar tearing or cracking, by ultrasonic testing.
 - .4 All welded splices, by ultrasonic testing.
- .16 Submit reports to Consultant, Contractor and Authorities of Jurisdiction including extents of inspection and deficiencies observed. Work will be inspected in shop and when erected.

3.6 FIELD PAINTING

- .1 Paint in accordance with Division 09.
 - .1 Touch up damaged surfaces and surfaces without shop coat with primer to SSPC-SP-6 except as specified otherwise.

3.7 COATING TOUCH-UP

- .1 Touch up galvanized surfaces damaged during transportation, handling, storage, and erection and as a result of work of other sections.
- .2 Touch up in accordance with ASTM A780.
- .3 Clean damaged surfaces with stiff wire brush to remove rust, loose and cracked coatings.
- .4 Clean welds, bolted connections and abraded areas.
- .5 Apply galvanizing repair materials to match hot dip coating weight and appearance.

3.8 DEFECTIVE WORK

- .1 Variations in excess of specified tolerances, and failure of materials or workmanship to meet requirements of this specification, and which cannot be repaired by approved methods, will be considered defective work performed by this section.
- .2 Replace defective work, as directed by Consultant.
- .3 Contractor shall pay for additional inspection and testing and related expenses if work has proven to be deficient.

END OF SECTION

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Part 1 General

1.1 SUMMARY

- .1 Section Includes
 - .1 Labour, Products, equipment, and services necessary to complete the work of this Section.
- .2 Related Requirements
 - .1 Section 05 31 00 – Steel Decking.
 - .2 Section 05 12 23 – Structural Steel for Buildings.

1.2 REFERENCES

- .1 Reference standards: Perform the work of this Section in conformance with the requirements of the following standards:
 - .1 American Society for Testing and Materials International, (ASTM)
 - .1 ASTM A36/A36M-19, Standard Specification for Carbon Structural Steel.
 - .2 ASTM A53 / A53M – 12, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
 - .3 ASTM A193/A193M-23, Specification for Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service or High Pressure Service and Other Special Purpose Applications.
 - .4 ASTM A307-21, Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.
 - .5 ASTM A500 / A500M - 21a, Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
 - .6 ASTM A1085 / A1085M – 15, Standard Specification for Cold-Formed Welded Carbon Steel Hollow Structural Sections (HSS)
 - .7 ASTM F3125 / F3125M - 22, Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength.
 - .2 Canadian Institute of Steel Construction (CISC)/Canadian Paint Manufacturer's Association (CPMA)
 - .1 CISC/CPMA 1-73a, Quick-Drying, One-Coat Paint for Use on Structural Steel.
 - .2 CISC/CPMA 2-75, Quick-Drying, Primer for use on Structural Steel.
 - .3 CISC Code of Standard Practice – 8th Edition (2015)
 - .3 Canadian Standards Association (CSA International)
 - .1 CSA G40.20/G40.21-13 (R2018), General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .2 CSA S16:14, Design of Steel Structures.

- .3 CSA S136-16, North American Specification for the design of Cold-Formed Steel Structural Members.
- .4 CSA W47.1:19, Certification of Companies for Fusion Welding of Steel Structures.
- .5 CSA W48:23, Filler Metals and Allied Materials for Metal Arc Welding.
- .6 CSA W55.3-08(R2018), Certification of Companies for Resistance Welding of Steel and Aluminum.
- .7 CSA W59-18, Welded Steel Construction.
- .4 The Society for Protective Coatings (SSPC)
 - .1 SSPC.SP 1, Solvent Cleaning
 - .2 SSPC.SP 2, Hand Tool Cleaning
 - .3 SSPC.SP 3, Power Tool Cleaning
 - .4 SSPC.SP 6, Commercial Blast Cleaning
 - .5 SSPC.SP 7, Brush-off Blast Cleaning
 - .6 SSPC.SP 10, Near-white Blast Cleaning
- .2 Work of this Section to conform to CSA S16 except as noted herein. Where specific requirements are noted herein, they are in addition to the requirements of CSA S16 and do not supersede them unless specifically stated.

1.3 DESIGN AND DETAILING REQUIREMENTS

- .1 Design joists, bridging, and accessories in accordance with requirements of CSA S16 and CSA S136 (with CSA-S136.1) for the loading and the depths shown on the drawings and to allow for movements indicated.
- .2 All joists, members, and joints shall be designed by a Professional Engineer registered in the Province of Ontario. Joists supporting uniform loadings may be selected from standard loading tables prepared by the Professional Engineer but those supporting concentrated or other special loads shall be individually designed.
- .3 Total load deflection shall not exceed 1/240 of the span and live load deflection 1/360 of the span for roofs and 1/480 of the span for floors.
- .4 Camber shall conform to the requirements of CSA S16. In all cases camber is not to exceed 1.5 x dead load deflection.
- .5 Where point loads are shown but not specifically located, for purposes of design, place the loads to give maximum stress combination.
- .6 Design bottom chords of open-web steel joists for an additional concentrated force of 0.4 kN placed in any location on the bottom chord between panel points. This load is to be used to check local axial force and bending conditions without contributing to the global bending moment.
- .7 Design all joist top chords for eccentricity between intersection of axis of chord and end diagonal and the centre of bearing of joist. For joists framing from one side only of a beam, centre the reaction point of the joist over the centre of the supporting beam.

- .8 For joists framing from both sides of a beam design the top chord of the end panel for additional eccentricity between the centre of bearing of joist and centroid of beam as shown on drawings.
- .9 Arrange joists and bridging to accommodate recessed fixtures, and mechanical and electrical services.
- .10 Locate bridging at panel points wherever possible.
- .11 Use crossed diagonal type bridging for joists 600 mm and deeper, unless otherwise noted. Install bridging by bolting to welded gussets at top and bottom chords and at the intersection of diagonals. Such connections shall permit continuous transfer of loads in bridging through the chords.
- .12 Where horizontal top and bottom bridging is used, cross brace joists every 20 joists or 20 m, whichever is less.
- .13 Install ceiling extensions where required.
- .14 Composite open-web steel joists.
 - .1 Design open-web steel joists with shear studs to act compositely with the concrete slab.
 - .2 Camber open-web steel joists for the sum of dead load and one-quarter of live load deflections maximum.
 - .3 Supply shear studs to steel deck subcontractor for welding through metal deck.
- .15 Where steel is exposed in the finish work, provide neat details and connections. Avoid excessive gaps and protrusions in forming connections.
- .16 Do not permit connections to encroach on the clearance lines required for the installation work of other sections.
- .17 Minimum thickness of material for interior use only:
 - .1 Hot Rolled Sections - 3 mm
 - .2 Rods - 9 mm
 - .3 Cold Formed Sections - 2 mm
 - .4 Flats - 6 mm

1.4 SUBMITTALS

- .1 Submit all submittals, including fabrication and erection documents and materials list, in accordance with Division 01.
- .2 Source quality control submittals
 - .1 Submit 5 copies of mill test reports 4 weeks prior to fabrication of structural steel.
 - .1 Mill test reports to show chemical and physical properties and other details of steel to be incorporated in project.
 - .2 Provide mill test reports certified by metallurgists qualified to practice in province of Ontario, Canada.

- .3 Provide structural steel Fabricator's affidavit stating that materials and products used in fabrication conform to applicable material and products standards specified and indicated.
- .3 Shop Drawings
 - .1 Verify site conditions and dimensions on site before shop drawing preparation. Show all on shop drawings.
 - .2 Shop drawings must be original. Reproduction of Consultants' design drawings is not acceptable.
 - .3 Fabrication drawings:
 - .1 Submit shop details, fully detailed and dimensioned, with complete information necessary for fabrication without reference to structural drawings.
 - .2 Submit typical details of connections and any special connections for review before preparation of shop drawings.
 - .3 Fabrication drawings to be stamped and signed by a Professional Engineer licensed in the Province of Ontario and experienced in design and installation of the Work of this Section.
- .4 Delegated design submittals:
 - .1 Submit sketches and design calculations stamped and signed by qualified professional engineer licensed in Province of Ontario, Canada.
 - .1 Confirm requirements with the Consultant prior to submitting shop drawings.
 - .2 Submit loads used in connection design without reference to structural drawings. Clearly indicated if loads are factored or otherwise amplified.

1.5 QUALITY ASSURANCE

- .1 Licensed Professionals:
 - .1 Engage a Professional Engineer licensed in the Province of Ontario and experienced in design and installation of the Work of this Section to:
 - .1 Prepare or directly supervise the design, execution, operations, procedures, and preparation of shop drawings.
 - .2 Check all drawings and calculations before submission.
 - .3 Certify that checks have been made by sealing and signing shop drawings and calculations.
 - .4 Inspect all joists after fabrication.
 - .5 Confirm that the joists have been fabricated in accordance with the design requirements.
 - .6 Approve any modifications made in the field.
- .2 Inspection and Testing Company shall be qualified under CSA W178.
- .3 Welding inspectors shall be certified by Canadian Welding Bureau in Category (a), Buildings, to CSA W178.2.

- .4 Companies to be certified under Division 1 or 2 of CSA W47.1 for fusion welding of steel structures and/or CSA W55.3 for resistance welding of structural components.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Handle and store steel materials at the job site in such a manner as to cause no damage to other materials, to existing buildings, to property or to the new structure.
- .2 Handle structural steel so as to avoid distortion.

Part 2 Products

2.1 MATERIALS

- .1 Structural steel: to CSA G40.20/G40.21 Grade 350W (Fy=350 MPa) or ASTM A992 (Fy=345 MPa).
- .2 Cold-formed steel: to CSA S136.
- .3 Square and Rectangular HSS Sections: to CSA G40.20/21 grade 350W (Fy = 350 MPa) class C or H, ASTM A500 grade C (Fy = 345 MPa) or ASTM A1085 (Fy = 345 MPa)
- .4 Circular HSS Sections: to CSA G40.20/21 grade 350W (Fy = 350 MPa) class C or H, ASTM A500 grade C (Fy = 317 MPa) or ASTM A1085 (Fy = 345 MPa)
- .5 Bolts, nuts and washers: to ASTM A 325M, grade A325. Where in contact with galvanized structural steel, use galvanized bolts, nuts and washers.
- .6 Headed studs: to CSA W59, Type B, min. Fy=350 MPa
- .7 Welding materials: to CSA W59 and certified by Canadian Welding Bureau.
- .8 Shop paint for interior exposures not requiring more than 6 months of protection: quick-drying primer CISC/CPMA standard 2-75.
- .9 Shop primer for interior exposure not requiring more than 12 months of protection: Quick-drying one-coat paint CISC/CPMA standard 1-73a.

2.2 FABRICATION

- .1 Fabricate steel joists, bridging, and accessories in accordance with CSA S16 and CSA S136 and in accordance with reviewed shop drawings.

2.3 FINISHES

- .1 Clean, prepare surfaces and shop prime structural steel in accordance with CSA S16 and CSA S136.
- .2 Surface cleaning and preparation shall be in conformance with the following:
 - .1 Clean all members to SSPC-SP 1 – Solvent Cleaning, Remove loose mill scale, rust, oil, dirt and foreign matter using any suitable method.
 - .2 For members not exposed in the final condition receiving shop primer or paint clean steel to SSPC-SP 3 Power Tool Cleaning.

- .3 For members receiving intumescent coating clean steel to SSPC-SP 6 Commercial Blast Cleaning.
- .4 For members receiving zinc-rich coating clean steel to SSPC-SP 6 Commercial Blast Cleaning.
- .3 Apply one coat of primer in shop to steel surfaces to achieve minimum dry film thickness of 1.5 to 2.0 mils, except:
 - .1 Interior Steel: Concealed
 - .1 Primer: One coat iron oxide type: to CAN/CGSB-1.40-M89 (or equivalent).
 - .2 Interior and Exterior Steel: Exposed
 - .1 Primer: One coat applied in accordance with architectural finish schedules.
 - .2 Apply paint under cover, on dry surfaces when surface and air temperatures are above 5 degrees C.
 - .3 Maintain dry condition and 5 degrees C minimum temperature until paint is thoroughly dry.
 - .4 Strip paint from bolts, nuts, sharp edges and corners before prime coat is dry.
 - .5 Primer for steel to receive intumescent paint to be compatible with finish paint specified.
 - .3 Primer for steel to receive intumescent fireproofing: Determined to be acceptable based on adhesion and compatibility characteristics under laboratory conditions in accordance with ASTM D3359-09e2, Method A and/or ASTM D4541-09e1, and approved by manufacturer of Intumescent fireproofing to be applied.
 - .4 Surfaces to receive intumescent fireproofing shall be free and clean of dust, grease, or other foreign matter. Existing coatings (except compatible coating manufacturer approved primer), mill scale or surface contaminants shall be removed.
 - .5 Do not apply primer to the following surfaces:
 - .1 Surfaces encased in or in contact with cast-in-place concrete including top flanges of beams supporting slabs.
 - .2 Surfaces and edges to be field welded for a distance of 50 mm from the joint.
 - .3 Contact surfaces of friction type shear connections assembled with high-strength bolts.
 - .4 Top flanges of composite joists with field welded shear connectors.
 - .5 Surfaces fireproofed by spray-applied fire-resistant material.
- .4 Apply touch-up paint after erection to all areas which have been missed, scraped or chipped using the same paint as the shop coat or primer.

2.4 TESTING AND INSPECTIONS

- .1 Inspection and testing of materials and shop fabrication of work of this Section, and field quality control specified elsewhere in this Section, will be performed by an Inspection and Testing Company.
- .2 Do not commence fabrication until details of inspection have been agreed upon in writing with the Agency.
- .3 Inspection and Testing Company shall check:
 - .1 Mill Inspection: Check that materials conform to specified standards. Mill test reports, properly correlated to materials, will be accepted in lieu of physical tests.
 - .2 Check welders' CWB certification and review welding procedures.
 - .3 Perform shop and field inspection and testing as outlined in 3.7.

Part 3 Execution

3.1 GENERAL

- .1 Structural steel work: in accordance with CSA S16 and CSA S136.
- .2 Welding: in accordance with CSA W59

3.2 EXAMINATION

- .1 Verification of Conditions
 - .1 Verify dimensions and condition of existing work, report discrepancies and potential problem areas to Consultant for direction before commencing fabrication.

3.3 MARKINGS

- .1 Mark materials in accordance with CSA G40.20/G40.21. Do not use die stamping. If steel is to be left in unpainted condition, place marking at locations not visible from exterior after erection.
- .2 Match marking: shop mark bearing assemblies and splices for fit and match.

3.4 ERECTION

- .1 Erect steel joists, bridging, and accessories in accordance with CSA S16 and CSA S136 and in accordance with reviewed erection drawings.
- .2 Field cutting or altering structural members is not permitted unless approved in writing by a Professional Engineer licensed in the Province of Ontario and experienced in design and installation of the Work of this Section.
- .3 Use erection techniques and equipment that will not mark or abrade surfaces of exposed structural steel.
- .4 Repair all small bends and kinks received during transportation before the members are erected. Replace, as directed, members seriously damaged.

- .5 Make adequate provision for all loads acting on the structure during erection. Provide temporary bracing to keep the structure stable, plumb and in true alignment during construction. Any bracing members or connections shown on the plans are those required for the finished structure, and may not be sufficient for erection purposes. Such additional temporary bracing as may be required is the responsibility of the contractor. Temporary bracing shall remain in place until concrete slabs, masonry etc., required for final stability are completed.
- .6 Install bolts which are not pre-tensioned to be snug tight. Use turn-of-nut method for bolts in pre-tensioned connections. Finger tighten bolts to a snug fit and burr threads for slotted connections.
- .7 Report failure of material to fit together properly and report to obtain approval for corrective measures.
- .8 Provide dissimilar metal separators between aluminium members and structural steel.
- .9 Clean with mechanical brush and touch up shop primer to bolts, rivets, welds and burned or scratched surfaces at completion of erection.

3.5 FIELD QUALITY CONTROL

- .1 Inspection and testing of materials and workmanship will be carried out by Inspection and Testing Company.
- .2 Provide safe access and working areas for testing on site, as required by testing agency and as authorized by Consultant.
- .3 Submit test reports to Consultant within 1 week of completion of inspection.
- .4 Payment of costs of tests as specified in Division 01.
- .5 Inspection and Testing Company shall:
 - .1 Verify that structural steel is fabricated in accordance with shop drawings.
 - .2 Verify that specified fabrication, welding, cleaning and painting procedures are followed.
 - .3 Inspect erection and fit-up, including placing, plumbing, levelling and temporary bracing and conformance with specified tolerances.
 - .4 Inspect bolted connections.
 - .5 Inspect welded joints, including slag removal.
 - .6 Provide general inspection of field cutting and alterations.
 - .7 Provide general inspection of shop coating touch-up.
 - .8 Inspect zinc primer and zinc-rich paint, including surface preparation and coating thickness.
 - .9 For surfaces inaccessible for cleaning and painting after assembly verify that these are treated before assembly.
 - .10 For surfaces painted with zinc-rich paint or zinc primer, verify that specified surface preparation is followed, and specified paint thickness is applied.

- .11 Submit reports to Consultant, Contractor and Authorities of Jurisdiction including extents of inspection and deficiencies observed. Work will be inspected in shop and when erected.

3.6 FIELD PAINTING

- .1 Paint in accordance with Division 09.
 - .1 Touch up damaged surfaces and surfaces without shop coat with primer to SSPC-SP-3 except as specified otherwise.

3.7 COATING TOUCH-UP

- .1 Touch up in accordance with ASTM A780.
- .2 Clean damaged surfaces with stiff wire brush to remove rust, loose and cracked coatings.
- .3 Clean welds, bolted connections and abraded areas.

3.8 DEFECTIVE WORK

- .1 Variations in excess of specified tolerances, and failure of materials or workmanship to meet requirements of this specification, and which cannot be repaired by approved methods, will be considered defective work performed by this section.
- .2 Replace defective work, as directed by Consultant.
- .3 Contractor shall pay for additional inspection and testing and related expenses if work has proven to be deficient.

END OF SECTION

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Part 1 General

1.1 SUMMARY

- .1 Section Includes
 - .1 All labour, materials, equipment and services, required to perform all operations required for complete furnishing, fabrication and installation of all steel deck and shear connectors and related work as indicated on the Drawings, specified in this Section and required by job conditions.
 - .2 The work shall include, but not be limited to the following:
 - .1 Steel roof, floor and form deck.
 - .2 Pour stops around the building perimeter and at all openings, end closures, closure plates around all columns and work of other trades and any other accessories required.
 - .3 Saddles, valley plates and sump pans.
 - .4 Deck supports not shown or specified under other Sections, but necessary for the proper support of deck and applied loads.
 - .5 Shoring of deck where shown in the Drawings and where required to properly support applied loads and/or maintain uniform concrete slab thickness and maintain specified floor finish tolerances.
 - .6 Cutting and forming of holes and openings through steel deck, including the reinforcing of deck to safely support both temporary and permanent construction.
 - .7 Hanger tabs and other vertical supports for ceilings and other lightweight devices.
 - .8 Field-applied shear connectors.
 - .9 Field-applied deformed anchor bars stud welded to structural steel.
- .2 Related Requirements
 - .1 Section 03 30 00 – Cast-In Place Concrete.
 - .2 Section 05 12 23 – Structural Steel for Buildings.

1.2 REFERENCES

- .1 Reference standards: Perform the work of this Section in conformance with the requirements of the following standards:
 - .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM A653/A653M-22, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - .2 ASTM A792/A792M-22, Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
 - .2 Canadian Standards Association (CSA International)
 - .1 CSA S16-14, Design of Steel Structures.

- .2 CSA S136-16, North American Specification for the Design of Cold-Formed Steel Structural Members.
- .3 CSA W47.1:19, Certification of Companies for Fusion Welding of Steel Structures.
- .4 CSA W48:23, Filler Metals and Allied Materials for Metal Arc Welding.
- .5 CSA W55.3-08(R2018), Certification of Companies for Resistance Welding of Steel and Aluminum.
- .6 CSA W59-2-18, Welded Aluminum Construction.
- .3 Canadian Sheet Steel Building Institute (CSSBI)
 - .1 CSSBI 10M-18, Standard for Steel Roof Deck.
 - .2 CSSBI 12M-18, Standard for Composite Steel Deck.

1.3 DESIGN AND DETAILING REQUIREMENTS

- .1 Design of all steel deck shall be by a Professional Engineer licensed in the Province of Ontario and experienced in design and installation of the Work of this Section, who shall sign and seal shop drawings prior to submission for review.
- .2 Floor Deck
 - .1 Design floor deck (either composite or non-composite as specified) in conformance with CSA S136 and CSSBI 12M, Articles 7.6 and 7.7, including Appendix thereto, for loading indicated on drawings and concentrated loads stipulated in OBC.
 - .2 Design composite deck sections for concrete strength indicated on drawings. In design of composite deck allow for loss of composite action at trench header duct locations.
 - .3 Deflection of floor deck shall not exceed:
 - .1 $1/360$ of span under superimposed dead and live loads.
 - .2 $1/180$ of the span or 20mm, whichever is smaller, under the weight of wet concrete and steel deck.
 - .4 Steel deck units shall be capable of sustaining the loads of wet concrete and placing and finishing operation, including unbalanced conditions, without overstressing the deck units or causing undue deflection or vibration, and, unless otherwise specified, without temporary shoring.
 - .5 Requirements of Regulatory Agencies:
 - .1 Satisfy requirements of any Fire Rated Assembly Design specified for the Project.
 - .2 Fabricate and install floor deck which forms part of a required fire rated system exactly as specified in Underwriters' Laboratories test design specification that validates required rating.

.3 Roof Deck

- .1 Design roof deck, closure strips, and mechanical fasteners in conformance with CSA S136 and CSSBI 10M Article 8.6 to ensure that the roof deck is capable of supporting:
 - .1 The dead, live, and snow loads shown on the Drawings,
 - .2 The concentrated loads stipulated in OBC,
- .2 Limit deflection of roof deck supporting suspended gypsum wall board ceilings to the following:
 - .1 1/360 of the span under specified live and snow loads.
 - .2 1/240 of the span under specified dead, live, and snow loads.
- .3 Limit deflection of all roof deck to the following:
 - .1 1/240 of the span under specified dead, live, and snow loads.
- .4 Requirements of Regulatory Agencies:
 - .1 Fabricate and install roof deck which forms part of a required fire rated system exactly as specified in Underwriters' Laboratories test design specification that validates required rating.

.4 Form Deck

- .1 Provide design, engineering, construction, safety and adequacy of all steel deck work acting as a concrete form.
- .2 Design and construct deck as a form to withstand all imposed forces, including all construction dead and live loads, horizontal loads from equipment and wind and forces due to vibration of plastic concrete.
- .3 Provide inspection of all steel deck as a form for conformance with this Specification.

1.4 SUBMITTALS

- .1 Submit all submittals, including erection and shoring drawings, in accordance with Division 01.
- .2 Shop Drawings
 - .1 Verify site conditions and dimensions on site before shop drawing preparation. Obtain all field measurements required for proper fabrication and installation of work covered by this Section. Precise measurements are the responsibility of Contractor. Show all on shop drawings.
 - .2 Ensure correctness of dimensions and quantities, for the fitting to other or existing elements, for conditions to be confirmed and correlated at the site, and for the verification of the physical interrelationships of elements of the work.
 - .3 Shop drawings must be original. Reproduction of Consultants' design drawings is not acceptable.
 - .4 Shop drawings to be stamped and signed by qualified professional engineer licensed in the Province of Ontario, Canada and experienced in the design and installation of the Work of this Section.
 - .5 Submit design calculations if requested by Consultant.

- .6 Indicate deck plan, profile, dimensions, base steel thickness, metallic coating designation, areas intended to be painted on site, connections to supports and spacings, projections, openings, reinforcement details and accessories.
- .7 Indicate gauge, grade of steel and galvanizing for each piece.
- .8 Show and dimension holes through deck and other work required for work of other Sections. Provide fieldwork drawings for holes not shown in shop drawings.
- .9 Deviations: Requests for deviations from the Drawings or Specifications shall be submitted on Contractor's letterhead. Acceptance of shop drawings including deviations not detected during shop drawing review will not relieve Contractor from responsibility to conform strictly to the Contract Documents. Deviations will be allowed only where permitted by the Consultant in writing. Proposed deviations must be accompanied by documented and physical evidence that will establish that quality of proposed deviation equals or exceed the quality specified.
- .10 Indicate details of temporary shoring of steel deck, such as location, time and duration of placement and removal of shoring for concrete fill decks.
- .11 Contractor shall coordinate and cross check for accuracy, completeness and correct relationship of the work of other Sections, each shop drawing prepared for the work of this Section, including each shop drawing prepared by accepted subcontractors. Consultants' review of shop drawings does not relieve Contractor of these responsibilities.

1.5 QUALITY ASSURANCE

- .1 Licensed Professionals:
 - .1 Engage a Professional Engineer licensed in the Province of Ontario and experienced in design and installation of the Work of this Section to:
 - .1 Prepare or directly supervise the design, execution, operations, procedures, and preparation of shop drawings.
 - .2 Check all drawings and calculations before submission.
 - .3 Certify that checks have been made by sealing and signing shop drawings and calculations.
- .2 Erector to be certified under Division 1 or 2 of CSA W47.1 for fusion welding of steel and/or CSA W55.3 for resistance welding.
- .3 Welders to be CWB approved for deck welding.
- .4 Inspection and Testing Company shall be qualified under CSA W178.

1.6 DELIVERY, STORAGE, AND HANDLING

- .1 Handle and store materials at the job site in such a manner as to cause no damage to other materials, to existing buildings, to property or to the new structure.

Part 2 Products

2.1 MATERIALS

- .1 Steel Deck:
 - .1 Zinc-iron alloy (ZF) coated steel sheet to ASTM A653/A653M, minimum Grade 230, with ZF75 coating; or
 - .2 Aluminum-zinc alloy (AZ) coated steel sheet to ASTM A792/A792M, minimum Grade 230, with AZM150 coating.
- .2 Galvanized deck:
 - .1 Zinc (Z) coated steel sheet to ASTM A653/A653M, minimum Grade 230, with Z275 coating; or
 - .2 Aluminum-zinc alloy (AZ) coated steel sheet to ASTM A792/A792M, minimum Grade 230 with AZM150 coating.
- .3 For prefinished deck: Colour to be selected by the Architect from manufacturer's standard list.
- .4 For decks to be painted on site: zinc-iron alloy coated decks suitable for finish painting, for all locations indicated in the Architectural drawings.
- .5 Closures: as indicated in accordance with manufacturer's recommendations.
- .6 Cover plates, cell closures and flashings: steel sheet with minimum base steel thickness of 1.22 mm (18ga). Metallic coating same as deck material.
- .7 Primer: zinc rich, ready mix to CAN/CGSB-1.181.
- .8 Caulking: to Division 07.
- .9 Shear studs: to CSA W59.

2.2 TYPES OF DECKING

- .1 Decking not supporting concrete:
 - .1 Decking: 1.22 mm (18ga) minimum base steel thickness (galv), 38 mm (1 ½") maximum deep profile, non-cellular, interlocking side laps, or as noted on drawings.
 - .2 Attachment pattern: Welds shall be 20 mm (¾") dia. fusion welds at 914/7 pattern and at 150 mm (6") centres on side supports (longitudinal welds), or as noted on drawings. Mechanically clinch side joints at 150 mm (6") centres, or as noted on drawings.
- .2 Decking supporting concrete:
 - .1 Decking: composite steel deck: 1.22 mm (18ga) minimum base steel thickness (galv), 38 mm (1 ½") deep profile, upright embossed fluted profile, interlocking side laps.

- .2 Attachment pattern: Welds shall be 20 mm (¾") dia. fusion welds at 914/7 pattern and at 150 mm (6") centres on side supports (longitudinal welds), or as noted on drawings. Mechanically clinch side joints at 150 mm (6") centres, or as noted on drawings
- .3 Decks supporting gyp-crete:
 - .1 Decking: 14 mm CANAM P-3012 or approved equivalent.
 - .2 Attachment pattern: by steel stud fabricator.

2.3 FABRICATION

- .1 Fabricate roof deck in accordance with CSSBI 10M.
- .2 Fabricate composite steel deck in accordance with CSSBI 12M.
- .3 Fabricate sections from steel sheets by rolling. Form integral ribs which will bear on supports and form interlocking male and female side laps.

Part 3 Execution

3.1 EXAMINATION

- .1 Verify alignment and elevations of supporting members before laying decking. Do not proceed with erection until conditions are made satisfactory.
- .2 Report unsatisfactory or non conforming conditions to the Consultant in writing prior to the start of work.

3.2 GENERAL

- .1 Structural steel work: in accordance with CSA S16, CSA S136, and CSSBI 10M and CSSBI 12M.
- .2 Welding: in accordance with CSA W59, except where specified otherwise.

3.3 ERECTION

- .1 Erect steel deck as indicated and in accordance with CSA S16, CSA S136, CSSBI 10M, and CSSBI 12M and in accordance with reviewed erection drawings.
- .2 Place steel decking on structure and adjust to final position before permanently securing thereto. Bring each unit to proper bearing on supporting members. Pack if required between supporting steel and steel decking.
- .3 Align deck end to end to accurately fit with the corresponding sections, with sections parallel, even and straight.
- .4 Lap ends over supports: 150 mm (6") minimum.

- .5 Weld and test stud shear connectors through steel deck to steel joists/beams below in accordance with CSA W59.
 - .1 Weld shear studs, with a full 360 degrees weld capable of developing 120% of the shear values listed in CSA S16, through steel deck where required, to the top flange of supporting steel.
 - .2 Test the first two studs installed each day in accordance with CSA W59. Maintain record of the studs tested. Replace studs rejected by Inspection and Testing Agency
 - .3 Studs shall not be welded to painted surfaces or to surfaces with heavy rust, mill scale, dirt, sand, or other materials which will interfere with the welding operations.
 - .4 Install studs in conformance to stud manufacturer's printed directions.
- .6 Immediately after deck is permanently secured in place, touch up metallic coated top surface with compatible primer where burned by welding.
- .7 Prior to concrete placement, steel deck to be free of soil, debris, standing water, loose mill scale and other foreign matter.
- .8 Temporary shoring, if required, to be designed to support construction loads, wet concrete and other construction equipment. Do not remove temporary shoring until concrete attains 75% of its specified 28 day compression strength.
- .9 Place and support reinforcing steel as indicated.
- .10 Block flutes solid below mechanical units, sleepers; point loads, unless otherwise indicated.
- .11 Where metal decking rests on exterior masonry walls, fill web spaces with neoprene closures.
- .12 Where flutes are at right angles to exterior walls, and decking exposed on underside extends beyond these walls, the interlocking side laps of the decking shall be caulked for [0.4 m][16"] immediately over the walls. Install interior and exterior closures, the exterior closures being suitably caulked to prevent air infiltration. In addition, provide roofer with sufficient quantity of glass fibre pads to close off top-side flutes directly over the face of the wall.
- .13 Where flutes run at right angles to interior partitions, fill web spaces with double run of acoustical closures.
- .14 Acoustical closures are not required between interior partitions and underside of decking in areas having a suspended ceiling.
- .15 Where flutes are parallel to interior partitions, install steel flashings to provide a neat juncture between the two materials.
- .16 Note that roof areas have slopes in both directions. Where required, terminate deck at a "break-point" and provide a butt or lap joint as required.

- .17 Install sheet metal flashing of similar material to the deck to close gap between floor units and columns. Close open ends of cell runs which occur at columns, openings, walls and where cells change direction, with cell closures of minimum core thickness of [1.2 mm][0.0478"].
- .18 Install cell closures at locations required to contain poured concrete.
- .19 Install edge forming for concrete slabs over deck.

3.4 OPENINGS AND AREAS OF CONCENTRATED LOADS

- .1 No reinforcement required for openings cut in deck which are smaller than 150 mm (6") square and where not more than two vertical webs are removed.
- .2 Frame deck openings with any one dimension between 150 mm to 450 mm (6" to 18") with suitable reinforcement according to the loads involved.
- .3 For deck openings with any one dimension greater than 450 mm (18") reinforce in accordance with structural framing details except as otherwise indicated.

3.5 CONNECTIONS

- .1 Install connections in accordance with CSSBI recommendations as indicated.

3.6 INSPECTION AND TESTING

- .1 Inspection and Testing Company shall check:
 - .1 Mill test reports, welders' CWB certification, deck types, gauge and coating thicknesses.
 - .2 All fastening, side laps and button punching.
 - .3 Deck reinforcement at holes cut in deck.
 - .4 Installation of sheet metal strips and edge reinforcing.
 - .5 Deck bearing lengths at supporting members.
- .2 Inspection and Testing Company shall visually check all stud shear connectors and test as stipulated in 05 12 23.
- .3 Submit reports to Consultant, Contractor, and Authorities of Jurisdiction including extents of inspection and deficiencies observed.

3.7 DEFECTIVE WORK

- .1 Deficient work or any work failing to strictly conform to the Contract Documents shall be removed and replaced, or repaired if accepted by Consultant, at no cost to the Owner, or Consultants.
- .2 Contractor shall prepare appropriate details and procedures to bring such work into conformance with the Contract Documents and submit to Consultant for review and acceptance. All drawings and details of proposed corrective work shall be neatly and clearly drafted in scale clearly identifying location and extent of such work. Contractor shall, through the Owner, reimburse the Consultant for time and expense incurred reviewing proposal procedures and details in accordance with the Consultant's current fee schedule.

- .3 Non-conforming work may be rejected by Owner, or Consultants at any time, regardless of prior acceptance in shop drawings, prior inspection, inclusions in certificates of payment.
- .4 Deficient work shall include, but not be limited to:
 - .1 Bent or warped pieces.
 - .2 Weld damage to include:
 - .1 Deck burn through.
 - .2 Undersized welds.
 - .3 Damage to structural components.
 - .4 Damage to deck coating or paint.
 - .3 Unauthorized cutting.
 - .4 Surface defects.
 - .5 Surfaces not sufficiently clean to receive stud shear connector or spray fireproofing.
 - .6 Workmanship not in accordance with the Drawings, with this Specification, with accepted samples, or with referenced codes or standards.
 - .7 Exceeding tolerances.
- .5 Contractor shall pay for additional inspection and testing and related expenses if work has proven to be deficient.

END OF SECTION

Section 06 10 00

ROUGH CARPENTRY FOR MINOR WORKS

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1 GENERAL

1.01 RELATED REQUIREMENTS

- .1 Section 06 40 00 Architectural Woodwork

1.02 REFERENCE STANDARDS

- .1 CSA Group (CSA)
 - .1 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.
 - .2 CSA O121-08, Douglas Fir Plywood.
 - .3 CSA O141-05(R2009), Softwood Lumber.
 - .4 CSA O151-09, Canadian Softwood Plywood.
 - .5 CAN/CSA-O325.0-07, Construction Sheathing.
 - .6 CAN/CSA-Z809-08, Sustainable Forest Management.
- .2 National Research Council Canada (NRC)
 - .1 National Building Code of Canada 2015 (NBC).
- .3 Forest Stewardship Council (FSC)
 - .1 FSC-STD-01-001-2004, FSC Principle and Criteria for Forest Stewardship.
- .4 Green Seal Environmental Standards (GS)
 - .1 GS-11-11, Paints and Coatings.
- .5 National Lumber Grades Authority (NLGA)
 - .1 Standard Grading Rules for Canadian Lumber 2010.
- .6 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
 - .1 SCAQMD Rule 1113-A2011, Architectural Coatings.
- .7 Sustainable Forestry Initiative (SFI)
 - .1 SFI-2010-2014 Standard.

1.03 ACTION AND INFORMATIONAL SUBMITTALS

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

1.04 MAINTENANCE MATERIAL SUBMITTALS

- .1 Extra Stock Materials:
 - .1 Provide electrical equipment backboards for mounting electrical equipment as indicated. Use 19 mm thick plywood on 19 x 38 mm furring around spacing, perimeter and at maximum 305 mm intermediate

1.05 QUALITY ASSURANCE

- .1 Lumber identification: by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.
- .2 Plywood identification: by grade mark in accordance with applicable CSA standards.
- .3 Plywood, OSB and wood based composite panel construction sheathing identification: by grademark in accordance with applicable CSA standards.

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- .4 Sustainable Standards Certification:
 - .1 Certified Wood: submit listing of wood products and materials used in accordance with CAN/CSA-Z809.

1.06 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 indoors, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect wood from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.

2 PRODUCTS

2.01 MATERIALS

- .1 Lumber: unless specified otherwise, softwood, S4S, moisture content 19% or less in accordance with following standards:
 - .1 CAN/CSA-O141.
 - .2 NLGA Standard Grading Rules for Canadian Lumber.
 - .3 CAN/CSA-Z809 or FSC or SFI certified.
- .2 Furring, blocking, nailing strips, grounds, rough bucks, cants, curbs, fascia backing and sleepers:
 - .1 Board sizes: "Standard" or better grade.
 - .2 Dimension sizes: "Standard" light framing or better grade.
 - .3 Post and timbers sizes: "Standard" or better grade.
- .3 Panel Materials:
 - .1 Douglas fir plywood (DFP): to CSA O121, standard construction.
 - .1 Urea-formaldehyde free.
 - .2 Canadian softwood plywood (CSP): to CSA O151, standard construction.
 - .1 Urea-formaldehyde free.
 - .3 Plywood, OSB and wood based composite panels: to CAN/CSA-O325.
 - .1 Urea-formaldehyde free.
- .4 Wood Preservative:
 - .1 Surface-applied wood preservative: clear water repellent preservative.
 - .2 Pentachlorophenol use is restricted to building components that are in ground contact and subject to decay or insect attack only. Where used, pentachlorophenol-treated wood must be covered with two coats of an appropriate sealer.
 - .3 Structures built with wood treated with pentachlorophenol and inorganic arsenicals must not be used for storing food nor should the wood come in contact with drinking water.
- .4 Primers, Paints in accordance with manufacturer's recommendations for surface conditions.

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ROUGH CARPENTRY FOR MINOR WORKS

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2.02 ACCESSORIES

- .1 Fasteners: to CAN/CSA-G164, for exterior work, pressure- preservative treated lumber.
- .2 Nails, spikes and staples: to CSA B111.
- .3 Bolts: 12.5 mm diameter unless indicated otherwise, complete with nuts and washers.
- .4 Proprietary fasteners: toggle bolts, expansion shields and lag bolts, screws and lead or inorganic fibre plugs, explosive actuated fastening devices, recommended for purpose by manufacturer.

3 EXECUTION

3.01 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for rough carpentry installation in accordance with manufacturer's written instructions.
 - .1 Inform Consultant of unacceptable conditions immediately upon discovery.
 - .2 Proceed with installation only after unacceptable conditions have been remedied

3.02 PREPARATION

- .1 Treat surfaces of material with wood preservative, before installation.
- .2 Apply preservative by dipping, or by brush to completely saturate and maintain wet film on surface for minimum 3 minute soak on lumber and 1 minute soak on plywood.
- .3 Re-treat surfaces exposed by cutting, trimming or boring with liberal brush application of preservative before installation.
- .4 Treat material as follows:
 - .1 Wood furring for outside surface of exterior masonry and concrete walls.
 - .2 Wood sleepers supporting wood subflooring over concrete slabs in contact with ground or fill.

3.03 INSTALLATION

- .1 Comply with requirements of National Building Code of Canada (NBC), supplemented by the following paragraphs.
- .2 Install furring and blocking as required to space-out and support casework, cabinets, wall and ceiling finishes, facings, fascia, soffit, siding and other work as required.
- .3 Align and plumb faces of furring and blocking to tolerance of 1:600.
- .4 Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other work.
- .5 Install wood cants, fascia backing, nailers, curbs and other wood supports as required and secure using galvanized steel fasteners.
- .6 Install wood backing, dressed, tapered and recessed slightly below top surface of roof insulation for roof hopper.
- .7 Install sleepers as indicated.

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ROUGH CARPENTRY FOR MINOR WORKS

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- .8 Use caution when working with particle board. Use dust collectors and high quality respirator masks.
- .9 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.
- .10 Countersink bolts where necessary to provide clearance for other work.

3.04 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.

END OF SECTION

Section 06 40 00

ARCHITECTURAL WOODWORK

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1 GENERAL ARCHITECTURAL WOODWORK

1.01 RELATED REQUIREMENTS

- .1 Section 07 92 00 - Joint Sealants: Sealant materials and application.
- .2 Section 09 91 23 - Interior Painting: Site finishing materials and application

1.02 REFERENCE STANDARDS

- .1 American National Standards Institute (ANSI)
 - .1 ANSI/ASME 18.6.1 1981 (R2012) Wood Screws (Inch Series).
 - .2 ANSI/BHMA A156.9-2010, Cabinet Hardware.
 - .3 ANSI/BHMA A156.11-2014, Cabinet Locks.
 - .4 ANSI/BHMA A156.16-2013, Auxiliary Hardware.
 - .5 ANSI/BHMA A156.18-2012, Materials and Finishes.
 - .6 ANSI/BHMA A156.20-2006, Strap and Tee Hinges and Hasps.
 - .7 ANSI A208.1-09, Particleboard.
 - .8 ANSI A208.2-09, Medium Density Fiberboard (MDF) for Interior Applications.
 - .9 ANSI/HPVA HP-1-10, Standard for Hardwood and Decorative Plywood.
- .2 Architectural Woodwork Manufacturers Association of Canada (AWMAC)
 - .1 Architectural Woodwork Standards (AWMAC AWS), 2014.
- .3 Architectural Woodwork of the North American Architectural Woodwork Standards 3.1 (NAAWS 3.1) 2017 in accordance with the Custom Grade Standards Category.
- .4 ASTM International
 - .1 ASTM A 153/A 153M-[16], Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
 - .2 ASTM E 1333-[14], Standard Test Method for Determining Formaldehyde Concentrations in Air and Emission Rates From Wood Products Using a Large Chamber.
 - .3 ASTM F 1667-[13] Standard Specification for Driven Fasteners: Nails, Spikes and Staples.
- .5 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-11.3-M87, Hardboard.
 - .2 CAN/CGSB-71.20-M88, Adhesive, Contact, Brushable.
 - .3 CAN/CGSB-71.19-M88, Adhesive, Contact, Sprayable.
- .6 CSA Group (CSA)
 - .1 CSA O112-M Series 1977 (R2006) Standards for Wood Adhesives.
 - .2 CSA O121-08(R2013), Douglas Fir Plywood.
 - .3 CSA O141-05 (R2014), Softwood Lumber.
 - .4 CSA O151-14, Canadian Softwood Plywood.
 - .5 CSA O153-M1980 (R2014), Poplar Plywood.
 - .6 CAN/CSA-Z809-08(R2013), Sustainable Forest Management.
- .7 Forest Stewardship Council (FSC)
 - .1 FSC-STD-01-001-2004, FSC Principle and Criteria for Forest Stewardship.
- .8 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Safety Data Sheets (SDS).
- .9 National Electrical Manufacturers Association (NEMA)
 - .1 ANSI/NEMA LD-3-05, High-Pressure Decorative Laminates (HPDL).

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- .11 Sustainable Forestry Initiative (SFI)
 - .1 SFI-2015-2019 Standard and Rules.

1.03 PRE-INSTALLATION MEETING

- .1 Prior to 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.

1.04 ACTION AND INFORMATIONAL 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 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 PDF of shop drawings for initial review in accordance with requirements of Division 01. Revise as directed, submit PDF 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 casework, typical and special installation conditions, and connections, attachments, anchorage and location of exposed fastenings.
 - .6 Show location on casework 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 x 300 mm. 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 samples of each species and cut of wood to be used.
 - .2 For opaque finish, submit [triplicate] samples for each colour selection.
 - .3 Submit duplicate samples of laminated plastic for each specified colour selection.
 - .4 Certifications: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

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1.05 QUALITY ASSURANCE

- .1 Perform Work of this Section by single architectural wood casework fabricator with minimum 5 years of current architectural casework production experience and having completed minimum one project in the past 5 years with value within 20% of the cost of the work of this Section.

1.07 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 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 dry location 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.

2 PRODUCTS

2.01 QUALITY GRADE

- .1 Provide all materials and perform all fabrication in accordance with AWMAC AWS Custom Grade and as follows, except where specified otherwise:
 - .2 Premium Grade
- .2 In case of conflict between Contract Documents and AWMAC AWS grade requirements, Contract Documents govern.

2.02 LUMBER

- .1 Softwood lumber: to CSA 0141-05 (R2014) and National Lumber Grades Authority requirements, with maximum moisture content of 7% for interior work, yard lumber selected for paint finish Ponderosa Pine species, to AWMAC custom grade.
- .2 Hardwood Lumber: to National Hardwood Lumber Association (NHLA) requirements, moisture content of maximum 7% for interior, maple species, to AWMAC select grade for varnish finish. Face materials for stained, varnished or natural finishes shall be closely matched for grain and colour.

2.03 PANEL MATERIALS

- .1 Particle board: to CAN3-0188.1-M78 minimum 45lb. density.
 - .1 with stain or varnish grade Birch facing both sides as indicated, except where used as plastic laminate core.

2.04 DECORATIVE VENEER FACED PLYWOOD

- .1 Hardwood plywood: to CSA 0115 of thickness indicated, veneer good two sides. Use veneer core with Type 1 bond. Select Birch Flat Cut (Majority of millwork).

For front face of administration desk / transaction counter use Select Maple QTD Plain with Horizontal Book Match. Finish with clear varnish.

2.05 COUNTER TOP CORES

- .1 Core material shall be 3/4" thick particle board as indicated. Use moisture resistant particleboard in countertops with sinks. Standard of acceptance: "Medex" by Sierra Pine.

2.06 LAMINATED PLASTIC MATERIALS

- .1 High pressure decorative laminated (HPDL) plastic. Plastic Laminate: to CAN3-A172-M79, Commercial grade.
Colour, finish and texture to be selected by Consultant from full line of samples from Formica and Arborite. Allow for 6 laminate selections.
- .2 Backing sheet: for plastic laminate to CSA A172, .508mm thick, sanded one face.
- .3 Laminated plastic adhesive: CSA 0112.5-M1977

2.07 CASEWORK FABRICATION - GENERAL

- .1 Supply and install built-in and unit cabinetwork as shown on drawings.
2. Mortise, dowel, block and glue all joints.
3. Ensure that the work is finished solid, square and with all drawers and doors operating properly.
4. Wood for millwork shall be without defects in any exposed parts.
5. Face materials for stained, varnished or natural finishes shall be closely matched for grain and colour.
6. Provide all rough hardware required for the proper execution of the work and provide and use all requisite screws, nails, bolts, holdfasts and accessories not otherwise specified.
7. Backpaint all millwork in contact with masonry.
8. Millwork shall be pre-assembled in the shop as far as practicable and delivered to the building ready to be set into place. Finished items shall be carefully worked to details, sanded free of surface defects and machine marks. Conceal nails and screws and include blocking and gluing, all as commensurate with first class durable work. Trim shall be cleanly cut with all miters accurately made and fitted. Use solid polyvinyl chloride (pvc) edge banding on exposed or semi-exposed edges of particleboard with melamine finish.
9. A 1/4" (6mm) hardwood edge shall be applied to exposed edges of plywood or particleboard with wood veneer.

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10. Members shall be erected in pieces as long as possible with inconspicuous joints.
11. All nails shall be long enough so that at least half their length penetrates the second member. Minimize splitting of wood by staggering the nails in the direction of the grain and keep nails as far away from the edges as possible.2.09
12. Except where shown otherwise on drawings, details, and specifications, finishing of millwork shall be as follows:

For clear varnish finish (spray application):
 - .1 One coat of sanding sealer
 - .2 Sand lightly
 - .3 Two coats of clear lacquer (flat finish)

2.08 LAMINATED PLASTIC CASEWORK FABRICATION

- .1 Do laminated plastic fabrication in compliance 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 2400 mm. Keep joints 600 mm 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 mitre laminate edges.
- .6 Apply laminate backing sheet to reverse side of core of plastic laminate work.
- .7 Apply laminated plastic liner sheet to interior of cabinetry where indicated.
- .8 In Chemistry Lab 249, Biology Lab 253, Teachers Prep Room 252, and Chemical Storage 252A: Provide and install acid resistant laminate as manufactured by:

Formica: CHguard, Colour CH0927 Folkstone

Arbortite: ArboChem, Colour Silver Grey

2.09 WOOD CASEWORK CONSTRUCTION

- .1 Doors:
 - .1 For varnish finish – 3/4" (19mm) uniform Birch veneer faced particleboard with 1/4" (6mm x 3/4" (19mm) hardwood edging at exposed edges.
- .2 Shelves, gables, tops and bottoms of upper cabinets:
 - .1 Shelves: For clear varnish finish 3/4" (19mm) Birch faced veneer particle core with 1/4" (6 mm) hardwood edging at exposed edges.

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Interior unexposed gables: 3/4" (19mm) For clear varnish finish Birch faced veneer core plywood with 1/4" (6mm) hardwood edging at exposed edges.

Tops of Upper Cupboards: 5/8" (16 mm) for clear varnish finish Birch faced veneer core plywood with 1/8" (3 mm) PVC edging at exposed edges.

Bottoms of Upper Cupboards: for clear varnish finish - 5/8" (16 mm) Birch faced, veneer core plywood with 1/4" (6 mm) x 5/8" (16 mm) hardwood edging.

Provide one gable/divider per door. Double up gables where two doors hinge from single location.

Spacing of gables - as detailed on drawings. Shelves over 3'-0" (900 mm) in length shall receive 3/4" (19 mm) x 1-1/2" (38 mm) hardwood edging at front and rear edges for strength. Shelving edge details shown on drawings are overruled by this requirement.

- .3 Drawers:
 - .1 Sides, bottoms and backs: - 1/2" (12 mm) thick, Birch faced veneer core plywood.
 - .2 Fronts: - for stained and clear varnish finish, 3/4" (19 mm) Birch faced veneer core plywood with 1/4" (6 mm) x 3/4" (19 mm) hardwood edging.
- .3 Bottoms: Up to 14" (350 mm) wide, 1/4" (6 mm), over 14" (350 mm) wide, 1/2" (12 mm) thick masonite.
- .4 Drawers shall slide on roller tracks as specified. House backs into sides, sides into fronts and bottoms into sides and fronts. Drawer boxes shall be as high and as deep as possible.
- .4 Backs (unless noted otherwise on drawings)
 - .1 For clear varnish finish - 1/2" (12 mm) Birch veneer core plywood.
 - .2 Backs shall be rabbeted into sides, tops and bottoms. Provide additional blocking as required to prevent warping.
- .5 Supports and framing
 - .1 Cabinets set on floor shall have wood bases and shall be secured to floor.
 - .2 Wall mounted cabinets shall be hung on steel angle clips (inside cabinet) or continuous 3/4" x 3/4" pine strips at top and bottom (inside cabinet) as required for secure support.
 - .3 Support framing of counter units using 3/4" x 2 1/2" pine or as detailed.
- .6 Countertops
 - .1 3/4" particleboard for application of surfacing material specified. Form shaped profiles and bends as indicated, using postforming.
 - .2 Provide side splashes where counters abut side walls and at change in level of countertops.

2.10 MILLWORK HARDWARE

- 1. The hardware list is provided to help establish the type, function, and quality, but not to be interpreted as a list for quantity. The contractor must verify the list and the drawings and provide additional hardware items that are not in the list but are required to complete the millwork installation and function.

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2. All hinges for cabinet doors shall be self-closing Blum Model 95M155-180 for 170 degree opening with appropriate finishing accessories.
3. Pulls for all upper and lower cabinet doors and for all drawers shall be Richelieu 30135 170, 128 mm centres, brushed stainless steel.
4. All drawer slides shall be Accuride #3832 or equivalent in a length to suit. With the exception of, 1075mm wide administration drawers shall be Blum Tandem undermount drawer slides.
5. Unless otherwise indicated, all adjustable shelf pilasters shall be fully recessed KV255 in length to suit complete with #256 shelf supports at a rate of four per shelf. Install Heavy-Duty Double Standard, Series #82 in Chemical Storage Room 252A and General Storage Room 252B.
6. Cabinet locks where called for shall be KV986NP suitable for thickness of the door or drawer being provided with a lock. Provide two locks where double doors are indicated to be locking. Locks are identified by a circle next to a door and drawer handle on the millwork elevations.

2.11 ACCESSORIES

- .1 Wood screws: plain, type and size to suit application.
- .2 Nails and staples: to CSA B111 and ASTM F 1667.
- .3 Splines: wood
- .4 Sealant: in accordance with Section 07 92 00 - Joint Sealants.

3 EXECUTION

3.01 EXAMINATION

- .1 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
 - .2 Inform Consultant of unacceptable conditions immediately upon discovery.
 - .3 Proceed with installation only after unacceptable conditions have been remedied.

3.02 INSTALLATION

- .1 Install architectural wood casework in accordance with AWMAC AWS grade for respective items.
- .2 In case of conflict between Contract Documents and AWMAC AWS grade requirements, Contract Documents govern.
- .3 Install prefinished millwork at locations shown on drawings.
 - .1 Position accurately, level, plumb straight.
- .4 Fasten and anchor millwork securely.
 - .1 Supply and install heavy duty fixture attachments for wall mounted cabinets.
- .5 Countersink mechanical fasteners at exposed and semi-exposed surfaces, excluding installation

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attachment screws and screws securing cabinets end to end.

- .6 Use draw bolts in countertop joints.
- .7 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.
- .8 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.
- .9 Apply moisture barrier between wood framing members and masonry or cementitious construction.
- .10 Fit hardware accurately and securely in accordance with manufacturer's written instructions.
- .11 Make cutouts for inset equipment and fixtures using templates provided.

3.03 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 millwork inside cupboards and drawers and outside surfaces.
 - .2 Remove excess glue, pencil and ink marks from surfaces.

3.04 PROTECTION

- .1 Protect millwork 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

Section 07 13 52

**MODIFIED BITUMINOUS SHEET
WATERPROOFING**

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1 GENERAL

1.1 RELATED REQUIREMENTS

1.2 REFERENCE STANDARDS

- .1 ASTM International Inc.
 - .1 ASTM C 726-05]Standard Specification for Mineral Fiber Roof Insulation Board.
 - .2 ASTM C 728-05], Standard Specification for Perlite Thermal Insulation Board.
 - .3 ASTM D 41-05], Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
 - .4 ASTM D 448-03a], Standard Classification for Sizes of Aggregate for Road and Bridge Construction.
 - .5 ASTM D 449-03], Standard Specification for Asphalt Used in Dampproofing and Waterproofing.
 - .6 ASTM D 2178-04], Standard Specification for Asphalt Glass Felt Used in Roofing and Waterproofing.
 - .7 ASTM D 6162-00a], Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fibre Reinforcements.
 - .8 ASTM D 6163-00e1], Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fibre Reinforcements.
 - .9 ASTM D 6164-05], Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements.
- .2 Canadian General Standards Board (CGSB)
 - .1 CGSB 37-GP-9Ma-83], Primer, Asphalt, Unfilled, for Asphalt Roofing, Dampproofing and Waterproofing.
 - .2 CGSB 37-GP-56M-80b(A1985)], Membrane, Modified, Bituminous, Prefabricated, and Reinforced for Roofing.
- .3 Canada Green Building Council (CaGBC)
 - .1 LEED Canada-NC Version 1.0-2004, LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Package For New Construction and Major Renovations (including Addendum [2007]).
 - .2 LEED Canada-CI Version 1.0-[2007], LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Guide For Commercial Interiors.
- .4 Canadian Roofing Contractors Association (CRCA)
 - .1 CRCA Roofing Specifications Manual-1997 .
- .5 CSA Group (CSA)
 - .1 CSA-A123.3-05], Asphalt Saturated Organic Roofing Felt.
 - .2 CSA-A123.4-04], Asphalt for Constructing Built-Up Roof Coverings and Waterproofing Systems.
 - .3 CSA A231.1/A231.2-06], Precast Concrete Paving Slabs/Precast Concrete Pavers.
- .6 Underwriters Laboratories' of Canada (ULC)
 - .1 CAN/ULC-S701-05], Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering.
 - .2 CAN/ULC-S702.2-03], Standard for Mineral Fibre Thermal Insulation for Buildings.

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- .3 CAN/ULC-S704-03, Standard for Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced.
- .4 CAN/ULC-S706-[02], Standard for Wood Fibre Thermal Insulation for Buildings.

1.3 ADMINISTRATIVE REQUIREMENTS

- .1 Convene pre-installation meeting one week prior to beginning waterproofing Work, with waterproofing contractor's representative and Consultant to:
 - .1 Verify project requirements.
 - .2 Review installation and substrate conditions.
 - .3 Co-ordination with other building subtrades.
 - .4 Review [manufacturer's] installation instructions and warranty requirements.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Provide two copies of most recent technical waterproofing components data sheets describing materials' physical properties and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Provide shop drawings and indicate:
 - .1 Flashing details.
- .4 Manufacturer's Installation Instructions: indicate special precautions required for seaming the membrane.

1.5 DELIVERY, STORAGE, AND HANDLING

- .1 Provide and maintain dry, off-ground weatherproof storage.
- .2 Store rolls of felt and membrane in upright position.
 - .1 Store membrane rolls with salvage edge up.
- .3 Remove only in quantities required for same day use.
- .4 Place plywood runways over completed Work to enable movement of material and other traffic.
- .5 Store sealants at +5 degrees C minimum.
- .6 Handle waterproofing materials in accordance with manufacturer's written directives, to prevent damage or loss of performance.

1.6 SITE CONDITIONS

- .1 Ambient Conditions
 - .1 Do not install waterproofing to manufacturers' recommendations.
- .2 Install waterproofing on surface, free of snow and ice, use only dry materials and apply only during weather that will not introduce moisture into waterproofing system.

1.7 WARRANTY

- .1 For Work of this Section 07 13 52 - Modified Bituminous Sheet Waterproofing, 12 months

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**MODIFIED BITUMINOUS SHEET
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warranty period.

2 PRODUCTS

2.1 PERFORMANCE CRITERIA

- .1 Waterproofing System: capable of resisting moisture/water head and preventing moisture migration to interior.
- .2 Compatibility between components of waterproofing system is essential. Provide written declaration to Consultant stating that materials and components, as assembled in system, meet this requirement.

2.2 MEMBRANE

- .1 Air/vapour barrier membrane components and accessories must be obtained as a single-source from the membrane manufacturer to ensure total system compatibility and integrity.
 - .1 Primary, Self-adhered vapour permeable, water resistive air barrier consisting of a reinforced, modified polyolefin tri-laminate film surface and patented permeable adhesive technology with split-back poly-release film; having the following typical physical properties:
 - .1 Basis of Design: Henry Blueskin VP160 Self-Adhered Water Resistive Air Barrier or equivalent approved by the Consultant
 - .2 Colour: Blue
 - .3 Thickness: 0.58 mm (23 mils)
 - .4 Water Vapour Permeance (ASTM E96): 1658 ng/Pa.m2.s., (29 perms)
 - .5 Air Leakage of Air Barrier Assemblies (ASTM E2357): Pass
 - .6 Air Permeance (ASTM E2178): Pass
 - .7 Nail Sealability (ASTM D1970): Pass
 - .8 Dry Tensile Strength (ASTM D882):
 - .1 41 lbf /182N MD
 - .2 29 lbf /129N CD
 - .9 Surface Burning Characteristics (ASTM E84):
 - .1 Flame Spread: Class A
 - .2 Smoke Development: Class A
 - .10 Low Application Temperature: -7 degrees C (20 degrees F).
 - .2 Thru-Wall Flashing:
 - .1 Non-vapour permeable self-adhered through-wall flashing consisting of an SBS rubberized asphalt compound integrally laminated to a yellow engineered thermoplastic film surface; having the following typical physical properties:
 - .1 Basis of Design: Henry® Blueskin TWF Thru-Wall Flashing or equivalent approved by the Consultant
 - .2 Colour: Yellow
 - .3 Thickness: 1.0 mm (40 mils)
 - .4 Water Vapour Permeance (ASTM E96): 0 ng/Pa.m2.s., (0.03 perms)
 - .5 High Temperature Stability - Flow Resistance (ASTM D5147): Pass
 - .6 Low Application Temperature: -7 degrees C (20 degrees F)

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**MODIFIED BITUMINOUS SHEET
WATERPROOFING**

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- .3 Sheet air/vapour barrier membrane shall be a SBS modified bitumen, self-adhering sheet membrane complete with a cross-laminated polyethylene film. To be installed on parapets, window and door openings. For application temperatures down to minus 12 degrees C. Membrane shall have the following physical properties:
 - .1 Basis of Design: Henry Blueskin SA Self-Adhered Water Resistive Air Barrier or equivalent approved by the Consultant
 - .2 Thickness: 1.0 mm (40 mils),
 - .3 Air leakage: <0.005 L/s.m² @ 75 Pa to ASTM E283-91,
 - .4 Water vapour permeance: 1.6 ng/Pa.m².s (0.03 perms) to ASTM E96,
 - .5 Low temperature flexibility: -30°C to CGSB 37-GP-56M,
 - .6 Elongation: 200% to ASTM D412-modified.
- .4 Adhesive Primer with low VOC content for self-adhering membranes at all temperatures shall be a synthetic rubber based adhesive, quick setting, having the following physical properties:
 - .1 VOC: <240 g/L,
 - .2 Solids by weight: 40%,
 - .3 Drying time (initial set): 30 minutes

3 EXECUTION

3.1 QUALITY OF WORK

- .1 Do examination, preparation and waterproofing Work in accordance with Roofing Manufacturer's Specification Manual and CRCA Roofing Specification Manual, Provincial Roofing Association Manual],
- .2 Do priming for asphalt waterproofing in accordance with manufacturer's written recommendations.

3.2 PROTECTION OF IN-PLACE CONDITIONS

- .1 Cover walls, walks and adjacent work where materials hoisted or used.
- .2 Use warning signs and barriers. Maintain in good order until completion of Work.
- .3 Clean off drips and smears of bituminous material immediately.
- .4 Dispose of rain water off roof and away from face of building until roof drains or hoppers installed and connected.
- .5 At end of each day's work or when stoppage occurs due to inclement weather, provide protection for completed Work and materials out of storage.
- .6 Metal connectors and decking will be treated with rust proofing or galvanization.

3.3 MEMBRANE APPLICATION

- .1 Adhesive or Primer for Sheet Applied Waterproofing Membrane:
 - .1 Apply adhesive or primer for sheet applied waterproofing membrane at rate recommended by manufacturer.

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- .2 Apply adhesive or primer to all areas to receive sheet applied waterproofing membrane, as indicated on drawings by roller or spray and allow minimum thirty (30) minute open time. Surfaces not covered by sheet applied waterproofing membrane during the same working day must be re-applied.
- .2 Sheet Applied Waterproofing Membrane – Vertical Application:
 - .1 Align and position sheet applied waterproofing membrane, to prepared and primed substrate in lengths of 2400mm (8') or less.
 - .2 Provide 65mm (2-1/2") laps at both sides and ends. Position for alignment and remove protective film.
- .3 Press firmly into place and promptly roll all laps to affect seal.
- .4 Overlap additional sheets in shingle fashion, staggering all vertical joints, and in accordance with manufacturer's recommendations.
- .5 Terminate sheet applied waterproofing membrane using termination sealant or termination bar, reglet or counter flashing as indicated. Refer to manufacturers standard details.
- .6 Seal all laps within 305mm (12") of a 90 degrees change in plane with termination sealant. Trowel apply a feathered edge to all horizontal termination sealant applications to allow shedding of water.

3.4 CLEANING

- .1 Remove bituminous markings from finished surfaces.
- .2 In areas where finished surfaces are soiled caused by work of this section, consult manufacturer of surfaces for cleaning advice and complying with their [documented] instructions.
- .3 Repair or replace defaced or disfigured finishes caused by work of this section.

END OF SECTION

Section 07 21 13

BOARD INSULATION

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1. GENERAL

1.1 SUMMARY OF WORK

- .1 Slab on Grade (unless indicated otherwise on the drawings):
 - .1 Install 50mm Styrofoam SM board insulation 1500mm horizontally at all perimeter walls.
 - .2 Install 50mm Styrofoam SM board insulation 1500mm vertically on the interior side of the foundation wall.
- .2 Isolated Footings (unless indicated otherwise on the drawings):
 - .1 Install 75 mm thick Styrofoam SM placed horizontally over footings along building perimeter.
 - .2 Refer to Geotechnical Report.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for blanket insulation and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Certificates:
 - .1 Submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .4 Test Reports:
 - .1 Submit certified test reports showing compliance with specified performance characteristics and physical properties.

2. PRODUCTS

2.1 INSULATION

- .1 Subgrade insulation at interior and exterior faces of foundation walls and horizontal insulation over footings at building perimeter shall be Styrofoam SM extruded expanded polystyrene insulation board as manufactured by Dow Chemical of Canada or the approved equivalent. Provide ship-lap edge boards.

2.2 ACCESSORIES

- .1 Insulation clips: impale type, perforated 50 x 50 mm cold rolled carbon steel 0.8 mm thick, adhesive back, spindle of 2.5 mm diameter annealed steel, length to suit insulation, 25 mm diameter washers of self locking type.

3. EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written instructions and requirements, including installation, handling and storage instructions in brochures or on packaging, and technical

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BOARD INSULATION

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data sheets.

3.2 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for blanket insulation application in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate.
 - .2 Inform Architect 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 Architect.

END OF SECTION

Section 07 21 16

BATT AND BLANKET INSULATION

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1. GENERAL

1.1 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
 - .1 ASTM C 553-02, Specification for Mineral Fibre Blanket Thermal Insulation for Commercial and Industrial Applications.
 - .2 ASTM C 665-01e1, Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
 - .3 ASTM C 1320-05, Standard Practice for Installation of Mineral Fiber Batt and Blanket Thermal Insulation for Light Frame Construction.
- .2 Canadian Standards Association (CSA International): CSA B111-1974(R2003), Wire Nails, Spikes and Staples.
- .3 Underwriters Laboratories of Canada (ULC): CAN/ULC-S702-1997, Standard for Mineral Fibre Insulation.

1.2 SUMMARY OF WORK

- .1 Work Included: The work of this Section includes the provision of all labour, materials, equipment and services required to supply and install building insulation, as indicated on the drawings, as specified herein and as required for a complete project.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for blanket insulation and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Certificates:
 - .1 Submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .4 Test Reports:
 - .1 Submit certified test reports showing compliance with specified performance characteristics and physical properties.

2. PRODUCTS

2.1 BATT AND BLANKET INSULATION

- .1 Install Insulation as follows (unless otherwise noted on the drawings):
 - .1 Exterior Cavity Wall Assemblies: 100mm Roxul Cavity Rock DD.
 - .2 Insulation for Curtain Wall System and Metal Panels: 100mm Roxul Curtain Rock
 - .3 All Interior Wall Partitions: 100mm Roxul AFB (Acoustical Fire Batts)

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BATT AND BLANKET INSULATION

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2.2 ACCESSORIES

- .1 Insulation clips: Impale type, perforated 50 x 50 mm cold rolled carbon steel 0.8 mm thick, adhesive back, spindle of 2.5 mm diameter annealed steel, length to suit insulation, 25 mm diameter washers of self locking type.
- .2 Nails: galvanized steel, length to suit insulation plus 25 mm, to CSA B111.
- .3 Staples: 12 mm minimum leg.
- .4 Tape: as recommended by manufacturer.

3. EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written instructions and requirements, including installation, handling and storage instructions in brochures or on packaging, and technical data sheets.

3.2 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for blanket insulation application in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate.
 - .2 Inform Architect 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 Architect.

3.3 INSULATION OF WALL BATT INSULATION

- .1 Install insulation to maintain continuity of thermal protection to building elements and spaces and to ASTM C 1320.
- .2 Lap ends and side flanges of membrane over framing members. Retain in position with insulation clips installed as recommended by manufacturer. Tape seal butt ends and lapped side flanges. Do not tear or cut vapour barrier.
- .3 Fit insulation closely around electrical boxes, pipes, ducts, frames and other objects in or passing through insulation.
- .4 Do not compress insulation to fit into spaces.
- .5 Keep insulation minimum 75 mm from heat emitting devices such as recessed light fixtures, and minimum 50 mm from sidewalls of CAN/ULC-S604 Type A chimneys and CAN/CGA-B149.1 and CAN/CGA-B149.2 Type B and L vents.
- .6 Do not enclose insulation until it has been inspected and approved Consultant.

3.4 INSTALLATION OF SEMI-RIGID CAVITY WALL INSULATION

- .1 Apply the specified 100 mm thick semi-rigid insulation to the outer face of the inner wythe of cavity walls over Blueskin air barrier with both, adhesive and mechanical fasteners.
- .2 Make applications at temperatures over 5 degrees C. only.

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BATT AND BLANKET INSULATION

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- .3 Ensure air barrier has cured prior to installation of insulation.
- .4 Apply adhesive to the insulation boards in continuous strips running from one side of the board to the other in a serpentine pattern to restrict movement of air behind the insulation. Strips shall be placed 15 cm (6") apart and applied in a 12 mm diameter bead. Press insulation firmly into place to ensure full contact with substrate.
- .5 Butt panels together firmly to seal edges. Where masonry cavity wall ties occur at insulation joints, ensure a snug fit of insulation boards around penetrating ties.
- .6 Stagger joints.
- .7 Press into place firmly with a sliding motion to ensure full contact with substrate.
- .8 Strike off excess adhesive.
- .9 Insulation shall be installed in a continuous unbroken manner. Make terminations of insulation tight, using adhesive, where it abuts other surfaces. Make insulation tight against all penetrating items by using adhesive.
- .10 Do not enclose insulation until it has been reviewed by the Consultant.
- .11 Provide minimum six (6) mechanical fasteners at edges and field of insulation boards, provide additional fasteners at all building corners and bottom row of insulation.

END OF SECTION

Section 07 21 29

SPRAY INSULATION

2026

1. GENERAL

1.1 REFERENCES

- .1 Canada Green Building Council (CaGBC)
 - .1 LEED Canada-NC Version 1.0-2004, LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Package For New Construction and Major Renovations (including Addendum 2007).
 - .2 LEED Canada-CI Version 1.0-2007, LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Guide For Commercial Interiors.
- .2 Canadian Urethane Foam Contractors' Association Inc. (CUFCA)
- .3 Green Seal Environmental Standards
 - .1 Standard GC-03-93, Anti-Corrosive Paints.
 - .2 Standard GS-11-97, Architectural Paints.
- .4 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .5 South Coast Air Quality Management District (SCAQMD), California State
 - .1 SCAQMD Rule 1113-06, Architectural Coatings.
- .6 Underwriters' Laboratories of Canada (ULC)
 - .1 CAN/ULC-S101-04, Fire Endurance Tests of Building Construction and Materials.
 - .2 CAN/ULC-S102-03, Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
 - .3 CAN/ULC-S705.1-01, Standard for Thermal Insulation - Spray Applied Rigid Polyurethane Foam, Medium Density, Material Specification.
 - .4 CAN/ULC-S705.2-05, Standard for Thermal Insulation - Spray Applied Rigid Polyurethane Foam, Medium Density, Application.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit two copies WHMIS MSDS - Material Safety Data Sheets.

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SPRAY INSULATION

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2. PRODUCTS

2.1 INSULATION

- .1 Insulation: Spray in place urethane foam to CGSB 51-GP-23M-78, Class 1, shall be free of chlorofluorocarbons (CFC).
- .2 Primers: as per manufacturer's recommendations for surface conditions.

2.2 ACCESSORIES

- .1 Insulation clips: impale type, perforated 50 x 50 mm cold rolled carbon steel 0.8 mm thick, adhesive back, spindle of 2.5 mm diameter annealed steel, length to suit insulation, 25 mm diameter washers of self locking type.

3. EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written instructions and requirements, including installation, handling and storage instructions in brochures or on packaging, and technical data sheets.

3.2 APPLICATION

- .1 Apply insulation to clean surfaces in accordance with CAN/ULC-S705.2 and manufacturer's printed instructions.
- .2 Use primer where recommended by manufacturer.
- .3 Apply sprayed foam insulation in thickness of minimum 50 mm.
- .4 Apply insulation where indicated on drawings and, in addition, to the exterior portion of all structural steel members and steel roof deck which penetrate or bear on the exterior building walls.
- .5 At the exterior portion of structural steel members and roof deck penetrating or bearing on the exterior building wall, apply insulation over a minimum length of 600mm of the member measured from the face of the wall insulation.
- .6 Apply sprayed foam insulation to fill the flutes of metal decking, where metal deckings meets exterior walls composed of gypsum board, steel studs, aluminum panels and steel beams, and around all openings in the deck.
- .7 Apply sprayed foam insulation to fill the flutes of metal decking above the main entrance vestibules as indicated on the drawings. Remove excess to provide flat surface on which to apply rigid insulation.
- .8 Apply spray foam insulation to fill window frames, and storefront glazing frames at the perimeter of the opening and all other gaps and openings where conventional insulation cannot be installed.

END OF SECTION

Section 07 42 00

CONCRETE PANELS

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1. GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 07 21 16 - Batt and Blanket Insulation
- .2 Section 07 27 00 - Air Vapour Barriers
- .3 Section 07 62 00 - Sheet Metal Flashing and Trim
- .4 Section 08 44 13 - Aluminum Windows
- .5 Section 09 22 16 - Metal Stud System

1.2 REFERENCES

- .1 Aluminum Association (AA).
 - .1 AA-DAF-45-R03, Designation System for Aluminum Finishes.
- .2 American Society for Testing and Materials International, (ASTM).
 - .1 ASTM A 653/A 653M-02a, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - .2 ASTM E 96-00e1, Standard Test Methods for Water Vapor Transmission of Materials.
- .3 Canadian General Standards Board (CGSB).
 - .1 CAN/CGSB-1.40-97, Anticorrosive Structural Steel Alkyd Primer.
 - .2 CAN/CGSB 1-GP-71 Amendment 13-1995, Methods of Testing Paints and Pigments (including Amendments 1 to 12 and Supplement No. 1).
 - .3 CAN/CGSB-34.16-M89, Sheets, Asbestos-Cement, Flat, Fully Compressed.
 - .4 CAN/CGSB-34.17-M89, Sheets, Asbestos-Cement, Flat, Semi-compressed.
 - .5 CAN/CGSB-34.18-94, Low Density Asbestos Sheets.
 - .6 CAN/CGSB-34.21-M89, Panels, Sandwich, Asbestos-Cement with Insulating Cores.
 - .7 CGSB 41-GP-6M-83, Sheets, Thermosetting Polyester Plastics, Glass Fibre Reinforced.
- .4 Health Canada/Workplace Hazardous Materials Information System (WHMIS).
 - .1 Material Safety Data Sheets (MSDS).
- .5 The Master Painters Institute (MPI).
 - .1 Architectural Painting Specification Manual - March 1998 (R2002).
- .6 National Research Council (NRC).
- .7 Transport Canada (TC).
 - .1 Transportation of Dangerous Goods Act (TDGA), 1992.
- .8 Underwriters Laboratories' of Canada (ULC).
 - .1 CAN/ULC-S114 Standard Method of Test for Determination of Non-Combustibility in Building Materials.
 - .2 CAN/ULC-S701-01, Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering.
 - .3 CAN/ULC-S702-1997, Standard for Thermal Insulation, Mineral Fibre, for Buildings.
 - .4 CAN/ULC-S704-2001, Standard for Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced.
 - .5 CAN/ULC-S706-02, Standard for Wood Fibre Thermal Insulation for Buildings.

1.3 DESIGN REQUIREMENTS

- .1 Design concrete panel wall to provide for thermal movement of component materials caused by ambient temperature range of 60 degrees C without causing buckling, failure of joint seals, undue stress on fasteners or other detrimental effects.
- .2 Include expansion joints to accommodate movement in wall system and between wall system and building structure, caused by structural movements, without permanent distortion, damage to infills, racking of joints, breakage of seals, or water penetration.
- .3 Design members to withstand dead load and wind loads as calculated in accordance with

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- NBC and applicable Municipal/Territorial regulations, to maximum allowable deflection of 1/180 of span.
- .4 Provide for positive drainage of condensation occurring within wall construction and water entering at joints, to exterior face of wall in accordance with NRC "Rain Screen Principles".
- .5 Design wall system to accommodate specified erection tolerances of structure.
- .6 Maintain following installation tolerances:
 - .1 Maximum variation from plane or location shown on approved shop drawings: 10 mm/m of length and up to 20 mm/100 m maximum.
 - .2 Maximum offset from true alignment between two adjacent members abutting end to end, in line: 0.75 mm.

1.4 SHOP DRAWINGS

- .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Indicate dimensions, wall openings, head, jamb and sill detail, layout, profiles and product components, including anchorage, accessories, finish colors, patterns and textures, compliance with design criteria and requirements of related work.

1.5 SAMPLES

- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit duplicate 150 x 150 mm samples of wall system, representative of materials, finishes and colours.

1.6 QUALIFICATIONS

- .1 Manufacturer: company specializing in producing composite wall panels with 5 years documented experience with sufficient capacity to produce and deliver required units without causing delay in work.
- .2 Installer: person specializing in composite wall panel installations with 5 years documented experience and approved by manufacturer.
- .3 Mock-ups: construct mock-ups in accordance with Section 01 45 00 - Quality Control and to requirements supplemented as follows:
 - .1 Provide mock-up for evaluation of surface finishes and workmanship.
 - .2 Provide initial production units for job-site assembly with other materials for review.
 - .3 Co-ordinate type and location of mock-ups with project requirements.
 - .4 Accepted units will be used as standard for acceptance of production units.
 - .5 Remove and replace units which are not accepted.
 - .6 Do not proceed with remaining work until workmanship, colour, and finish are reviewed and accepted by Consultant.
 - .7 Refinish mock-up area as required to produce acceptable work.
 - .8 When accepted, mock-up will demonstrate minimum standard of quality required for this work.
 - .1 Approved mock-up may remain as part of finished work.
- .4 Pre-Installation Meetings: convene pre-installation meeting one week prior to beginning on-site installation, with contractor's representative and Consultant
 - .1 Verify project requirements.
 - .2 Review installation and substrate conditions.
 - .3 Co-ordination with other building subtrades.
 - .4 Review manufacturer's installation instructions and warranty requirements.

1.7 DELIVERY, STORAGE AND HANDLING

- .1 Delivery: Deliver Materials to site in Manufacturer's original, unopened packaging, with labels clearly identifying product name and manufacturer.
- .2 Storage: Store Materials in accordance with the Manufacturer's instruction in unopened

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packaging until ready for installation. Store materials in a covered area, away from water, on a flat, level surface with adequate support to prevent sagging.

- .3 All boxes shall be opened and all components removed from the packaging and stacked flat with spacers between the pieces in their final environment for a minimum 3-4 days prior to installation.

2. PRODUCTS

2.1 MATERIALS

- .1 Fiber-Cement Panels (Concrete Panels)
 - .1 Fully compressed, autoclaved, Fibre Reinforced Cement sheet, color through-out the panel. The surface of the panel is characterized by fine sanding lines in the long direction.
 - .2 Panel dimensions: 8mm thick, Refer to drawings for exact dimension.
 - .3 Finish:
 - .1 Through-colored, semi-transparent finish.
 - .2 Colored finish with an additional, permanent, clear, waterproof top-coating.
 - .3 Consultant to select 2 colours from full line.
 - .4 Physical Characteristics: ASTM C1185, ASTM C1186, and EN 12467.
 - .5 Density Dry: 1580 kg/m³
 - .6 Bending strength at ambient, perpendicular: 32.0 N/mm²
 - .7 Bending strength at ambient, parallel: 22.0 N/mm²
 - .8 Modulus of elasticity at ambient, perpendicular: > 14.000 N/mm²
 - .9 Modulus of elasticity at ambient, parallel: > 12.000 N/mm²
 - .10 Hygric movement 0-100%, mean: 1.60 mm/m².
 - .11 Durability classification (EN 12467): Category A.
 - .12 Strength classification (EN 12467): Class 4.
 - .13 Thermal conductivity: 0,390 W/mK
 - .14 Fire reaction: (CAN/ULC-S135) Suitable for non-combustible construction in Canada.
 - .15 Basis of Design Product: Tectiva Through Color High Density Fibre Reinforced Cement Panels as manufactured by EuroPanel and distributed by Engineered Assemblies; info@engineeredassemblies.com or (905) 816-2218
- .2 Substructure:
 - .1 Vertical Girts:
 - .1 Vertical girts supporting panels shall be 1.2mm (18 gauge) thick, galvanized zinc-coated steel to ASTM A653 with Grade A coating Z275. Painted black.
 - .2 Preformed galvanized metal sheet, 1.2mm (18 gauge) thick, minimum base steel nominal thickness, notched or perforated for drainage.
 - .3 Girt locations as determined and approved by structural engineer, spaced based on manufacturer's panel load data.
 - .4 Girts:
 - .1 Girts behind panels to be vertical to allow vertical ventilation.
 - .2 Preformed black galvanized steel girts to be used at inside and outside corners to ensure corners are straight and closed visually, and used at intermediary panel locations and where panels come together.
 - .3 Girts provided by Engineered Assemblies: info@engineeredassemblies.com or (905) 816-2218.
 - .5 Cavity behind panels: Minimum 25mm of unrestricted space.
 - .6 Gap between panels: Minimum of 8mm to allow for expansion and contraction.
 - .7 Substructure to account for control joints of building to ensure a girt is not connected across the control joint.
 - .8 Install panels across one set of vertical girts to ensure that expansion and contraction of the substrate is controlled within framing members.

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- .2 Horizontal Clip System: 38mm wide, die cut aluminum extruded clip, adjustable to plumb structure, minimum 1.2mm (18gauge) thick galvanized zinc-coated steel to ASTM A653. System to provide compliance to ASHRAE 90.1 and thermally broken façade requirements of the building code.
 - .1 Adaptable horizontal framing members.
 - .2 Clip depth: 125mm
 - .3 Vertical Clip Spacing: to be determined.
 - .4 Basis of Design Product: EA RVRs TClip and Girt, Model T125, by Engineered Assemblies; info@engineeredassemblies.com or 905.816.2218.
- .3 Adhesive system:
 - .1 Adhesive system must comprise all materials recommended by manufacturer of façade adhesive systems. Compiling parts of different manufacturer's products which have not been tested as a system will not be acceptable.
 - .2 Prepare back of fibre cement panel with primer to remove issue of panel's porosity.
 - .3 System comprises double sided tape and adhesive. Double sided tape must adhere long enough for the adhesive to cure, and to create the proper spacing to allow for expansion and contraction.
 - .4 Adhesive must provide following strengths
 - .1 Tensile strength 1.70 N/mm²
 - .2 Shear strength 1.85 N/mm²
 - .5 Tape must provide following strengths
 - .1 Tensile strength 0.23 N/mm²
 - .2 Shear strength 0.22 N/mm²
 - .3 Compressive strength 0.025 N/mm²
 - .4 Thickness 3mm
 - .6 Girt substructure must be straight and free from deflection. Girt substructure must be clean, cleaned with manufacturer supplied materials.
 - .7 Girt substructure must be dry and relative humidity less than 90% and girt temperature must be 3°C higher than the dew point.
 - .8 Manufacturer's representative must be contacted before to installation to review installation instructions. Failure to hold this meeting will default warranty.
 - .9 Acceptable manufacturer: LjimTec adhesive system by Dynamic Bond NL.
- .4 Bird and Vent Screen:
 - .1 Continuous bird and vent screen located at top and bottom of panel system, where opening is minimum 25mm (1") wide, with minimum 50% free air flow, manufactured by Engineered Assemblies from perforated aluminum, painted black.
- .5 Flashings: Prefinished steel as specified in Section 07 62 00.
 - .1 Flashing at edges, top and bottom of panel system as per architectural drawings.
- .3 Breathable Sheathing Membrane:
 - .1 Sheathing Membrane: Triple layer, spun bonded polypropylene, breathable membrane with a nominal weight of 120 g/m², water vapour transmission of 150 perms minimum, as per ASTM E96; Colour: Black.
 - .1 Basis of Design Product: AirOutshield Sheathing Membrane, by SRP Canada, and distributed by Engineered Assemblies; info@engineeredassemblies.com or (905) 816-2218.
 - .2 UV Resistant Underlayment: Coated, black, spun bonded polyester, breathable membrane with a nominal weight of 270 g/m²
 - .1 Basis of Design Product: AirOutshield UV Resistant Underlayment by SRP Canada, and distributed by Engineered Assemblies; info@engineeredassemblies.com or (905) 816-2218.
 - .3 Seam Tape: 25mm double sided tape, 30 mil. thick, to seal vertical and horizontal seams between layers of AirOutshield.
 - .1 Basis of Design Product: Eternabond 25mm D.S Seam Tape by SRP Canada and distributed by Engineered Assemblies; info@engineeredassemblies.com or (905) 816-2218.

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3. EXECUTION

3.1 EXAMINATION

- .1 Verification of Conditions:
 - .1 Examine substrates to receive work and surrounding adjacent surfaces for conditions affecting installation. Coordinate with related sections to ensure proper dimensions are maintained.
 - .2 Verify site dimensions by accurate field measurements so that work will be accurately designed, fabricated and fitted to the structure.
 - .3 All penetrations through the façade for the work of other trades shall be fitted with a watertight sleeve. Verify flashings are in place, sealed with waterproof membrane and covered with building membranes.
 - .4 Maintain sheathing membrane integrity.
 - .2 Notify Contractor in writing of any conditions that are not acceptable.
 - .3 Proceed with installation after verification and correction of surface conditions acceptable to manufacturer.

3.2 INSTALLATION

- .1 Erect fiber-cement panel system in accordance with manufacturer's instructions.
- .2 Erect cementitious siding in straight lines, true, level and plumb. Maintain dimensions required by manufacturer for minimum distances from edge for holes and penetrations.
- .3 Space at top and bottom of each wall minimum 25mm (1"), as per manufacturer's details.
- .4 Installation to allow for thermal expansion of the panel.
- .5 Install panels with joints centered over framing.
- .6 Do not install using damaged, warped or misaligned material.
- .7 Where panels fit into accessories, allow room for expansion.
- .8 Finished installation shall be properly secured, free of rattles, distortions, waviness, and protrusions, damaged or chipped components.
- .9 Cut and flash wall penetrations with metal flashing.
- .10 Install breathable sheathing membrane in accordance to manufacturer's instructions. No penetrations are to be left in installed membrane.

3.3 CLEANING

- .1 Progress Cleaning: Leave work area clean at the end of each work day, ensuring safe movement of passing pedestrians.
- .2 Final Cleaning: At completion of installation, clean all surfaces so they are free of foreign matter using cleaners recommended by material manufacturer.
- .3 Restore panels and accessory components damaged during installation and construction so no evidence remains of corrective work. If results of restoration are unsuccessful, as determined by the Consultant, remove and replace damaged systems with new at no additional cost to the Owner.

END OF SECTION

Section 07 46 19

STEEL SIDING

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1 GENERAL

1.01 RELATED REQUIREMENTS

1. Section 07 62 00 SHEET METAL FLASHING AND TRIM

1.02 REFERENCE STANDARDS

- .1 American Society of Mechanical Engineers (ASME)
 - .1 ASME B18.6.3-2013, Machine Screws, Tapping Screws, and Metallic Drive Screws (Inch Series).
- .2 ASTM International
 - .1 ASTM A 653/A 653M-15e1, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - .2 ASTM D 2369-10-2015e1, Test Method for Volatile Content of Coatings.
 - .3 ASTM D 2832-92(2016), Standard Guide for Determining Volatile and Nonvolatile Content of Paint and Related Coatings.
- .3 CSA Group (CSA)
 - .1 CSA B111-1974(R2003)], Wire Nails, Spikes and Staples.
- .6 Underwriters Laboratories (UL)
 - .1 UL 2761 Sealants and Caulking Compounds
- .7 ULC Standards
 - .2 CAN/ULC-S741 08, Standard for Air Barrier Materials - Specification.

1.03 ADMINISTRATIVE REQUIREMENTS

- .1 Pre-Installation Meetings:
 - .1 Convene pre-installation meeting 1 week prior to beginning work of this Section and on-site installation, with Contractor's Representative and Consultant to:
 - .1 Verify project requirements.
 - .2 Review installation and substrate conditions.
 - .3 Co-ordination with other construction subtrades.
 - .4 Review manufacturer's written installation instructions and warranty requirements.

1.04 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for metal siding 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 Ontario Canada.
 - .2 Indicate dimensions, profiles, attachment methods, schedule of wall elevations, trim and closure pieces, soffits, fascia, furring, and related work.

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- .4 Samples:
 - .1 Submit duplicate samples of siding material.

1.05 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Operation and Maintenance Data: submit operation and maintenance data for installed products for incorporation into manual.
- .3 Warranty Documentation: submit warranty documents specified.

1.06 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.
- .3 Installer Qualifications: minimum three years documented experience with products specified.
- .4 Mock-Up:
 - .1 Provide site mock-up for work of this Section indicating methods and materials, and procedures proposed to achieve final results in accordance with Section 01 45 00 - Quality Control, and to comply with following requirements, using materials indicated for completed work:
 - .1 Build mock-ups in location and of size as directed by Consultant.
 - .2 Obtain Consultant's acceptance of mock-ups before starting construction; mock-up used throughout construction period as standard of acceptance for subsequent work.

1.07 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect steel siding from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.

1.08 SITE CONDITIONS

- .1 Execute work of this Section within environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer.

1.09 WARRANTY

- .1 Manufacturer's warranty: Submit, for Consultant acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty in addition to and not limit other rights Owner may have under Contract Documents.

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STEEL SIDING

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2 PRODUCTS

2.01 MATERIALS

- .1 Steel siding: Fabricated from commercial grade ASTM A 652M with 22-gauge galvanized steel pre-painted finish.
 - .1 Profile: vertical siding with concealed fasteners and weather tight overlap. 305mm wide x 38mm thick. Urban Accent by Ideal Roofing
 - .2 Pattern: smooth surface.
 - .3 Finish coating: factory precoated with fluorocarbon paint finish, 2 coat system dry paint film thickness of 0.025 mm.
 - .4 Colour: to BE SELECTED FROM FULL LINE OF AVAILABLE COLOURS BY CONSULTANT
 - .5 Back coating: ASTM A 653/A 653M, grade A,
 - .6 Gloss: to match existing.
 - .7 Thickness: 22-gauge
- .2 Fasteners: screws to CSA B111 B18.6.3 galvanized steel purpose made.
- .3 Sealants: in accordance with Section 07 92 00 - Joint Sealants.
 - .1 Test for acceptable VOC emissions in accordance with ASTM D 2369 and ASTM D 2832.

2.02 ACCESSORIES

- .1 Exposed trim: inside corners, outside corners, cap strip, drip cap, undersill trim, starter strip and window/door trim of same material, colour and gloss as cladding, with fastener holes pre-punched.

3 EXECUTION

3.01 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrate previously installed under other Sections or Contracts acceptable 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 remedied.

3.02 PREPARATION

- .1 Clean surfaces thoroughly prior to installation.
- .2 Repair substrate flaws or defects before applying siding or soffits.
- .3 Fur surfaces to even plane and free from obstructions.
- .4 Prepare surfaces using methods recommended by manufacturer for achieving best result for substrate under project conditions.

3.03 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

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STEEL SIDING

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sheets.

3.04 INSTALLATION

- .1 Install steel siding in accordance with manufacturer's written instructions.
- .3 Install continuous starter strips, inside and outside corners, edgings, soffit, drip, cap, sill and window/door opening flashings as indicated.
- .4 Install outside corners, fillers and closure strips with carefully formed and profiled work.
- .5 Install soffit and fascia cladding as indicated.
- .6 Maintain joints in exterior cladding, true to line, tight fitting, hairline joints.
- .7 Attach components in manner not restricting thermal movement.
- .8 Caulk junctions with adjoining work with sealant. Do work in accordance with Section 07 92 00 - Joint Sealants.

3.05 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.

3.06 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by preformed metal siding installation.

END OF SECTION

Section 07 52 00

MODIFIED BITUMINOUS MEMBRANE ROOFING

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1 GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 06 10 00 Rough Carpentry
- .2 Section 07 62 00 Sheet Metal Flashing and Trim
- .3 Section 07 92 00 Joint Sealants.

1.2 ROOF ASSEMBLIES

- .1 Supply all labour and materials necessary to complete the new Modified Bitumen Membrane Roofing, as specified and detailed in the areas as indicated on the drawings.
 - .1 Typical Roof Assemblies shall be:
 - 13mm Gypsum Sheathing
 - Vapour Barrier
 - 3 Layers of 50.8mm Rigid Insulation
 - Sloped Insulation Crickets (1:20) as indicated on the drawings
 - 13mm Protection Board
 - 1 Ply Modified Bitumen Base Sheet Membrane
 - 1 Ply Modified Bitumen Cap Sheet Membrane

1.3 ROOF ASSEMBLY FLASHING

- .1 Supply all labour and materials necessary to complete the new Modified Bitumen Membrane Roof Flashings and tie into existing roof assembly, as specified and detailed, in the areas as indicated on the drawings.

1.4 QUALIFICATIONS

- .1 The roofing contractor shall provide a competent foreman to supervise all work and act as the roofing contractor's representative unless instructed otherwise.
- .2 Roofing work shall be performed only by skilled applicators, employed by a company operating all adequate and necessary equipment to execute such work.

1.5 WORKMANSHIP

- .1 Installation shall be in strict accordance with the manufacturer's published instructions.
- .2 In instances where the manufacturer's published instructions are at variance with the requirements of the contract documents, notify the Consultant.
- .3 Include all associated costs of modifications to the contract documents necessary to suit the requirements of the proposed membrane manufacturer.

1.6 PRECAUTIONS

- .1 Roofing shall not be carried out when materials are damp and base sheet shall not be applied when ambient temperature is less than minus ten (-10) degrees Celsius. (Postpone roofing work when inclement weather appears imminent).
- .2 Apply each part of roofing system only when surfaces are clean and dry.
- .3 Conduct operations so as to leave deck exposed for minimum period of time. Protect, as required, to prevent water infiltration or environmental damage to building interior. At no time shall the deck be left exposed overnight.
- .4 Insulation shall not be left exposed to the elements nor shall more be laid than can be completely covered in the same day.

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- .5 Provide temporary membrane to render all insulation watertight if for some unforeseen reason work cannot be completed as specified. Remove temporary membrane completely prior to any further roofing operations.
- .6 Where work must continue over finished roofing membrane, protect surface with minimum 13mm thick plywood sheets.
- .7 Strictly adhere to all safety guidelines for the torching of Modified Bituminous Membrane
- .8 Any sharp projections, that in the opinion of the Consultant may penetrate the vapour barrier, shall be grounded smooth and flush.
- .9 All aspects of the re-roofing operation shall follow in close sequence. No part of the operation shall be so far ahead of the succeeding part that the latter cannot be finished that working day.
- .10 Contractor shall verify that the existing slope and/or added slope will permit the total drainage of water. If in the opinion of the contractor there is a possibility of water ponding, he shall advise the consultant so the situation can be addressed and corrected.

1.7 SUBMITTALS

- .1 Prior to ordering or installing any materials, submit the following for review;
 - .1 Complete technical data describing proposed membrane system (data shall be sufficiently detailed to permit confirmation of requirements of contract documents).
 - .2 Manufacturer's complete published installation instructions.

1.8 SHIOP DRAWINGS

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

1.9 COMPATIBILITY

- .1 Ensure and be responsible for compatibility of all components.
- .2 Confirm with roofing manufacturer and provide written acknowledgement that all components are compatible with his products.

1.10 STORAGE AND HANDLING

- .1 Deliver and store materials in original containers with manufacturers labels and seals intact.
- .2 Store materials elevated from contact with ground and moisture and protected from weather.
- .3 Store membrane rolls on end, one pallet high, selvage edge up; do not store in a leaning position.
- .4 Store combustible materials away from heat and open flame.
- .5 For ease of installation in colder weather, it is suggested that rolls be stored in a heated area prior to application.

1.11 SITE PROTECTION

- .1 During roofing work, exposed surfaces of finished walls shall be protected with tarps in order to prevent damage. Contractor shall assume full responsibility for any damage.

1.12 ENVIRONMENTAL REQUIREMENTS

- .1 Do not install roofing when temperature remains below -18 deg C for torch application.
- .2 Minimum temperature for solvent-based adhesive is -5 deg C.
- .3 Install roofing on dry deck, free of snow and ice, use only dry materials and apply only during weather that will not introduce moisture into roofing system.

1.13 PROTECTION

- .1 Fire Extinguishers: maintain stored pressure rechargeable type with hose and shut-off nozzle, ULC labelled for A, B and C class protection. Size 9 kg on roof one per torch applicator, within 6 m of torch applicator.
- .2 Maintain fire watch for 2 hours after each days roofing operations cease. Fire watch personnel are to have appropriate equipment, including heat sensor, cutting tools, fire extinguisher and cellular telephone.
- .3 Install water cut-offs at the end of each day=s work; remove completely prior to continuing further roofing applications.
- .4 Inspect all laps of the membrane application to ensure they are properly bonded. Repair any deficiencies prior to leaving the site for the day.
- .5 Base sheet applications should not be left exposed overnight unless all seams are torch welded prior to leaving the work site.

1.14 EXAMINATION

- .1 Examine all surfaces to receive new roof assembly, and if corrective measures are necessary, report items to Consultant in writing. Substrate shall be smooth, clean, dry, and free from depressions or sharp edges.
- .2 All required drains, wood blocking and curbs shall be securely in place prior to start of roofing work.
- .3 Inspect the substrate and all roof mounted mechanical equipment being affected by the work, to ensure they are in good repair and working order. Notify the Consultant, in writing, prior To commencing contracted work, should corrective measures be required.
- .4 Examine drawings and existing conditions, provide for all vents, curbs, stacks, roof mounted equipment curbs, new roof anchors and other openings through membrane roofing.

1.15 WARRANTY

- .1 Remedy all defects in the Modified Bituminous Membrane Roofing and Membrane Flashings installed here under which appear within a period of two (2) years from date of final completion.
- .2 Make all necessary repairs and replacements within 48 hours of receipt of written notification.
- .3 Provide a written warranty confirming above, issued on the corporate letterhead, signed and sealed by an authorized signing officer.
- .4 Nothing contained in this article shall be construed as in any way restricting or limiting the liability in common law and statutory liability of the Contractor.
- .5 Submit a written Ten (10) year, No Dollar Limit, Membrane Manufacture's Labour, Material and Workmanship Warranty for entire roof system, against all related failures except as a result of structural failure of substrate.

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1.16 MANUFACTURER'S REPRESENTATIVE

- .1 The roofing materials manufacturer will delegate a representative to visit the work site at commencement of work and completion of work.
- .2 At all times, the contractor shall permit and facilitate access to the work site and roofs to said manufacturer's representative.

1.17 LABORATORY TESTING

- .1 Upon request from the Owner, the elastomeric manufacturer=s shall supply the results of mechanical and chemical testing performed on the elastomeric asphalt materials in accordance with Section 01340 - Shop Drawings, Product Data, Samples and Mock-ups.
- .2 The tests shall be performed to certify compliance with CGSB 37-GP-56M standard, latest Edition.

1.18 FIELD TESTING

- .1 At each roof drainage area, after installation of base sheet, carry out three (3) cut tests to confirm adhesion of membrane to substrate. Carry out tests in locations and as directed by Consultant. Where adhesion is considered insufficient by Consultant, carry out additional cut tests as required to determine the extent of insufficient adhesion. Replace membrane with insufficient adhesion, to acceptance by Consultant. Patch test cuts with membrane patches at least 150 mm wider than cut on all sides. Assume costs for cut tests, membrane replacements and patches.
- .2 At each roof drainage area, after installation of base sheet, temporarily plug drain and flood entire surface to a depth of 20 mm. Remove plug. Allow water to drain. Immediately identify areas where ponding remains to a depth of 10 mm or more. Correct drainage by applying additional plies of base sheet membrane or by other means acceptable to Consultant. Repeat flood testing and correction until no ponding 10 mm or more in depth remains.

2 PRODUCTS

2.1 SUBSTRATE OVERLAY

- .1 Gypsum sheathing board ASTM C1396/C1396M. Board to be 13mm thick, treated core, exterior grade sheathing formulated to be water-resistant.

2.2 BITUMEN PRIMER

- .1 Asphalt: Type III Asphalt to CSA A123.4. To be low odour asphalt. Asphalt containers should be labelled clearly indicating the equiviscous temperature, the flash point temperature and the final blowing temperature. Contractor to provide Bill Of Lading verifying preceding information in the case of liquid asphalt.
- .2 Membrane Flashing Primer: composed of SBS synthetic rubbers, adhesive enhancing resins and volatile solvents designed for use with self-adhesive waterproofing membranes on most substrates. Standard of Acceptance: Elastocol Stick by Soprema or approved equivalent.
- .3 Black Bituminous Primer for metal surfaces only: to be composed of asphalt modified bitumen with thermoplastic polymers and volatile solvents.
- .4 Roofing cement: asphalt to CGSB 37-GP-9Ma.

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MODIFIED BITUMINOUS MEMBRANE ROOFING

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2.3 VAPOUR BARRIER

- .1 Parapet, Curbs, and Walls: Modified bitumen membrane with a minimum 100gram/m² non woven polyester reinforcement and a minimum thickness of 2.5mm. Under face to be self-adhesive and covered by a removable silicone release film. Top face to be covered by a thin poly-film. Membrane to satisfy CGSB 37-GP-56M requirements.
- .2 Gypsum Sheathing: Asphalt applied, SBS modified, non-woven polyester reinforcement membrane. Standard of acceptance: Soprema Elastophene 180 Sanded.

2.4 INSULATION

- .1 Polyiso Insulation: closed cell polyisocyanurate foam bonded on top and bottom sides to an organic/inorganic facer. Board size not to exceed 1200mm x 1200mm. Insulation to meet CAN/CGSB 51.26-M and CAN/ULC-S704. Standard of acceptance is E'NRG'Y3 by Johns Manville, AC Foam II by Atlas, and IKOTerm by IKO.
- .2 Fibrous glass batts: friction fit, unfaced to CSA A101 latest edition.

2.5 SLOPED INSULATION

- .1 Sloped Insulation Drain Sumps: shall be rigid closed cell polyisocyanurate foam bonded on top and bottom sides to an organic/inorganic facer. Insulation to meet CAN/CGSB 51.26-M and CAN/ULC-S704. Standard of acceptance is ENRGY3 by Johns Manville and AC Foam II by Atlas.
- .2 Sloped insulation crickets: shall be fibreboard to CAN/CSA-A247-M, Type I with minimum RValue 2.73 per 25mm thickness.
- .3 Insulation slopes and thickness shall be as indicated on the detailed drawings and roof plan and shall be a distinct separate layer with joints staggered over the base insulation.
- .4 Modules shall be factory cut to correct slopes and clearly marked to match provided shop drawings.
- .5 All valley corners and crickets shall be factory mitred.

2.6 INSULATION OVERLAY

- .1 Protection Board: 3mm thick asphaltic roofing board composed of a mineral fortified asphaltic core between 2 asphaltic saturated fibreglass liners. Board size to be 1220mm x 1520mm. Standard of acceptance is Sopraboard by Soprema or Protectoboard by IKO.

2.7 MODIFIED BITUMEN MEMBRANE

- .1 Two (2) ply system made from prefabricated modified bitumen membranes containing minimum 15% of elastomer Styrene Butadiene Styrene (SBS) and reinforced with nonflammable, fireproof and stress resistant insert of glass fibre or polyester.
 - .1 Base Sheet and Base Sheet Flashing for Non-Combustible Substrate: Modified bitumen membrane with a 180gram/m² reinforcement and a minimum thickness of 3mm. Under face to be covered by a thin poly-film for torch application. Top face to be covered with a thin poly-film for torch application. Membrane to satisfy CGSB 37-GP-56M.
 - .2 Base Sheet Flashing for Combustible Substrate: Modified bitumen membrane with a 180gram/m² reinforcement and a minimum thickness of 3mm. Under face to be selfadhesive and covered by a removable silicone release film. Top face to be covered by

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- a thin poly-film for torch application. Membrane to satisfy CGSB 37-GP-56M requirements.
- .3 Cap Sheet and Cap Sheet Flashing: modified bitumen membrane with a 250gram/m² non-woven polyester reinforcement and a minimum thickness of 4mm. Under face to be covered by a thin poly-film for torch application. Top face to be embedded with ceramic mineral granules. Membrane to be compatible with base sheet and satisfy CGSB 37-GP-56M requirements. Colour of granules to be light grey.
 - .4 Reinforcing Membrane: modified bitumen membrane with a 180gram/m² nonwoven polyester reinforcement and a minimum thickness of 3mm. Under face to be covered by a thin poly-film for torch application. Top face to be covered by a thin poly-film. Membrane to satisfy CGSB 37-GP-56M requirements.
 - .5 Protective Membrane: modified bitumen membrane with a non-woven polyester reinforcement and a minimum thickness of 5mm. Under face to be covered by a thin poly-film for torch application. Top face to be embedded with ceramic mineral granules. Membrane to satisfy CGSB 37-GP-56M requirements. Colour of granules to be light grey.
- .2 Low Temperature Requirements: Grade 2 material to pass low temperature requirements at - 30°C to CGSB 37-GP-56M.
 - .3 Test Results: Test results from a certified independent laboratory showing conformance to above requirements shall be submitted with tender documents or within 48 hours of tender closing.
 - .4 Standard Of Acceptance: S.B.S. Modified Bitumen Membranes as manufactured by Siplast, Soprema, Johns Manville, and IKO.

2.8 ACCESSORIES

- .1 Gypsum sheathing joint tape: to be masking tape 50mm in width.
- .2 Screws for fastening gypsum board to steel decks: #14, coated corrosion-resistant, zinc-plated or better fasteners and galvanized steel plates, listed by Factory Mutual Global, length to penetrate flute of deck by 20 mm, to CSA B35.3.
- .3 Liquid Membrane Flashing: Two-component methacrylate, compatible with roof membrane, including associated mesh reinforcement". Standard of acceptance: Alsan Flashing by Soprema.
- .4 Membrane Sealing Compound: Membrane sealing compound for membranes, as recommended and supplied by membrane manufacturer.

3 EXECUTION

3.1 STEEL DECK

- .1 Install gypsum sheathing over steel deck, as indicated on the detailed drawings.
- .2 Install gypsum sheathing boards with long side perpendicular to flutes of deck. Stagger joints in boards.
- .3 Terminate ends of boards on top of the flutes.
- .4 Mechanically fasten each board to the steel deck as follows:
 - .1 Fasteners shall penetrate through top of flute a minimum of 19mm and a maximum of 25mm.
 - .2 Fastening shall be in regular, evenly spaced pattern.
 - .3 Provide minimum 8 fasteners per 1200 x 2400 mm board in field of roof.
 - .4 Provide minimum 12 fasteners per 1200 x 2400 mm board for 2.4 m around perimeters and 14 fasteners per 1200 x 2400 mm board for 2.4m at corners.
 - .5 Provide minimum of two (2) fasteners required for pieces of sheathing 0.75 m²
- .5 Install joint tape over all joints in gypsum sheathing covering the roof deck.

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or smaller.

3.2 PRIMERS

- .1 Apply to all metal surfaces prior to any membrane installation.
- .2 Apply primer on all substrates that are to receive self-adhering membranes. Pre-apply membrane sealing compound to changes in plane and to irregularities in substrate as recommended by membrane manufacturer.

3.3 HOT BITUMEN

- .1 Use Type III Asphalt for all applications.
- .2 Apply asphalt at the manufacturer's equiviscous temperature (EVT) +/- 15°C. For modified bitumen membrane application, apply asphalt at manufacturer's equiviscous temperature (EVT) +/- 15°C or a minimum of 205°C, whichever is highest.
- .3 Do not heat kettle to asphalt flash point temperature.
- .4 Asphalt shall not be heated and held at final blowing temperature (FBT) for more than four (4) hours.
- .5 Interply Moppings - apply at 1.2 kg/m2.
- .6 Insulation Securement - apply at 2.0 kg/m2.
- .7 Before asphalt application, ensure all voids and gaps in the deck are blocked.

3.4 VAPOUR BARRIER

- .1 Install mop applied vapour barrier to full extent of roof field and self-adhered membrane at all parapets, walls, curbs, and other vertical surfaces, as detailed on the drawings.
- .2 Follow installation procedure as for 3.9 Membrane Flashing - Self-Adhesive.

3.5 INSULATION

- .1 Install insulation to meet thickness as required in scope of work and indicated on the drawings. Under sloped polyisocyanurate insulation boards, reduce thickness of base insulation by 12mm.
- .2 At drain location(s), install 1:50 sloped insulation sump in a single layer, finish insulation sump flush with top of surrounding insulation, size to be as indicated on drawings.
- .3 Install layer of base insulation. Fit boards tightly together. All gaps between boards shall be filled with insulation. Stagger all joints in boards. Set layer of base insulation into a full mop coating of bitumen.
- .4 Install second layer of insulation. Fit boards tightly together. All gaps between boards shall be filled with insulation. Stagger all joints in boards. Set layer of insulation into a full mop coating of bitumen.
- .5 Install layer of sloped insulation crickets, in areas indicated on the drawings, set into a full mop coating of bitumen. Ensure modules are placed in parallel rows, in a pre-designed order and as indicated on the shop drawings.
- .6 Ensure insulation fillers are fully adhered as specified.
- .7 Cover all insulation, as detailed, with an insulation overlay board, set into a full mop coating of bitumen. To be installed long side running perpendicular to the slope: Stagger all joints in boards and of insulation.
- .8 Butt sheets of insulation with moderate contact. Do not force insulation into place. Cut neatly at projections and points of termination. Replace all broken, damaged or misfit boards as work progresses. Where necessary, back-cut insulation to allow it to conform and stay bonded to irregular surfaces without bridging. Immediately after placement of each board, walk insulation into place to ensure positive bonding is achieved before bitumen cools.

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3.6 BASE SHEET

- .1 Remove entire packaging tape from the roll. Unroll the base sheet and allow to fully relax prior to installation; relaxation time will vary with weather conditions. Once the base sheet is fully relaxed, and just prior to its installation, re-roll the base sheet.
- .2 Install the base sheet parallel to the underlying protection board.
- .3 Do not superimpose the laps of the base sheet over the protection board joints. Using a chalk line, mark where the first course is to start. Unroll 2 or 3m of the base sheet and line it up to the chalk line or to the selvage edge. Re-roll and commence application. If the roll goes out of line by more than 12mm, cut and re-align.
- .4 Commencing at the lowest point of the roof, slowly unroll the base sheet while carefully and sufficiently heating the underside to produce a visible bead of bitumen, ensuring consistent 3 mm to 6 mm flow protrudes each side of the roll. Edges with inadequate bleed-out are to be verified for adhesion and any edges not fully adhered are to be locally corrected; constantly verify the adhesion to be certain that proper bonding is achieved. Apply the base sheet with 75mm side laps and 150mm end laps. Stagger the end laps by a minimum of 300mm. Cut off corners at end laps to be covered by next roll.

3.7 CAP SHEET

- .1 Remove entire packaging tape from the roll. Unroll the cap sheet and allow to fully relax prior to installation; relaxation time will vary with weather conditions. Once the cap sheet is fully relaxed, and just prior to its installation, re-roll the cap sheet.
- .2 Install the cap sheet with granules side up, and parallel to the underlying base sheet.
- .3 Do not superimpose the laps of the cap sheet over the laps of the base sheet. Using a chalk line, mark where the first course is to start. Unroll 2 or 3m of the cap sheet and line it up to the chalk line or to the selvage edge. Re-roll and commence application. If the roll goes out of line by more than 12mm, cut and re-align.
- .4 Commencing at the lowest point of the roof, slowly unroll the cap sheet while carefully and sufficiently heating the underside to produce a visible bead of bitumen, ensuring consistent 3 mm to 6 mm flow protrudes each side of the roll. Edges with inadequate bleed-out are to be verified for adhesion and any edges not fully adhered are to be locally corrected; constantly verify the adhesion to be certain that proper bonding is achieved. Apply the cap sheet with 75mm side laps and 150mm end laps. Stagger the end laps by a minimum of 300mm. Finish the cap sheet flush with the base of the parapet. Cut off corners at end laps to be covered by next roll.
- .5 Degranulate the cap sheet wherever another membrane will overlap. Heat the top face (granules) of the cap sheet with a torch and embed the granules into the soft bitumen using a round nose roofing trowel.
- .6 Spread granules onto soften bitumen over black marks and bitumen overflows.

3.8 MEMBRANE FLASHING – TORCHED APPLIED

- .1 Install the base sheet flashing prior to the cap sheet application.
- .2 Plan 2 ply membrane flashing application so that laps are not superimposed over the laps on the underlying membrane.
- .3 Install reinforcing gussets at all inside and outside corners as per manufacturer's recommendations.
- .4 Install membrane flashings with full roll widths perpendicular to the deck.
- .5 Remove entire packaging tape from the roll. Unroll the membrane and allow to fully relax prior to installation; relaxation time will vary with weather conditions. Precut membrane to proper sheet size.
- .6 Install the base sheet flashing by heating the underside of the base sheet flashing until the bitumen flows. Set the membrane in place and apply a firm pressure to the entire surface to ensure proper adhesion. Apply the base sheet flashing with 75mm side laps. Extend the base

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- sheet flashing 100mm from the base of the parapet onto the roof surface, and up the verticals 100mm above the top of the base sheet, or as indicated on the detail drawings. Cut off corners at leading end to be covered by next sheet.
- .7 Seal all side and end laps by sufficiently heating the base sheet flashing and pressing firmly on the edge of the membrane using a roofing trowel.
 - .8 After the cap sheet application, trace a chalk line on the cap sheet, 200mm from the base of the parapet and running parallel to the parapet. Degranulate the cap sheet from the base of the parapet to the chalk line and the side laps where the membrane will overlap on the mineral surface, by heating the top face (granules) of the cap sheet with a torch and embedding the granules into the soft bitumen using a round nose roofing trowel.
 - .9 Install the cap sheet flashing by heating the underside of the cap sheet flashing until the bitumen flows. Set the membrane in place and apply a firm pressure to the entire surface to ensure proper adhesion. Apply the cap sheet flashing with 75mm side laps. Extend the cap sheet flashing 200mm from the base of the parapet onto the roof surface and 450mm up the verticals, or as indicated on the detail drawings. Cut off corners at leading end to be covered by next sheet.
 - .10 Seal all side and end laps by sufficiently heating the cap sheet flashing and pressing firmly on the edge of the membrane using a roofing trowel.
 - .11 Secure all membrane flashings to verticals with continuous securement strips installed along the top edge of membrane flashings and fastened at 300mm on center, or as indicated on detail drawings.
 - .12 Use a wet sponge to tamp the membranes in place at the junction of the horizontal and vertical surfaces.
 - .13 Spread granules onto soften bitumen over black marks and bitumen overflows.

3.9 MEMBRANE FLASHING – SELF-ADHESIVE

- .1 Environmental and substrate conditions:
 - .1 When ambient or substrate temperatures are below 5°C (40°F), heat substrate with hot air gun.
 - .2 Store and maintain all membrane materials heated above 5°C (40°F) and remove only as much material as can be used before cooling.
- .2 Priming and preparation:
 - .1 Ensure contact surfaces are completely clean and free of moisture and other contaminants.
 - .2 Prime contact surfaces. Allow primer to dry only as recommended by manufacturer. Apply SA membrane within time delays recommended by manufacturer.
 - .3 At changes and plane and out-of-plane variations, pre-apply membrane sealing compound as recommended by membrane manufacturer, to eliminate voids under the membrane.
 - .4 Install base sheet gusset reinforcement at inside and outside corner locations.
- .3 Membrane application:
 - .1 Work up from base of slope.
 - .2 Install membrane true to line to completely cover the area intended to be protected.
 - .3 Unroll, align, dry fit and re-roll membrane.
 - .4 Roll or work membrane into place by hand to ensure a positive bond.
 - .5 Membrane is to be installed without air blisters and wrinkles. Immediately rework, repair or replace poorly installed membrane. Do not stretch material that would result in pull-back and deformity of the membrane at intersections.
 - .6 Press down on the membrane with a roller to ensure good adhesion.
 - .7 Lap all side laps 75 mm (3"), end laps 150 mm (6"). Where laps occur at changes of plan, lap 150 mm (6").
 - .8 Cut off corners at end laps to be covered by next flashing piece.
 - .9 Smooth the entire membrane surface with a roller a second time for full adhesion.

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- .4 Finishing:
 - .1 At penetrations, including drains, conduits, pipes, vents and scuppers, create seal by lapping SA membrane 100 mm onto penetration and sealing with membrane sealing compound.
 - .2 Repairs to defects are to be made with membrane patches at least 50 mm wider than the defect on all sides.
 - .3 Seal edges with membrane sealing compound at membrane terminations, including perimeters, interruptions, penetrations and patches.
 - .4 Where SA membrane is to be left as a temporary waterproofing, apply membrane sealing compound to exposed edges of laps.
 - .5 Membrane sealing compound is to be tooled to a consistently smooth and even surface.

3.10 ROOF DRAINS

- .1 Co-ordinate the roof drain installation with Division 15 – Plumbing.
- .2 Ensure the integrity of the vapour barrier is maintained, where applicable.
- .3 Install base sheet, 1 ply of reinforcing membrane (180 gram/m², torch applied) 1.0m x 1.0m centred over the drain and then complete the cap sheet application over the first two plies. Extend the cap sheet under the clamping ring
- .4 Trim roofing membrane and set clamping ring.

3.11 LIQUID MEMBRANE FLASHING

- .1 Prepare surfaces as recommended by manufacturer; surfaces must be clean, dry, and free of dirt, dust, and particles.
- .2 Apply a base coat of liquid membrane onto surfaces, 150mm from joints, angles, or openings.
- .3 Install reinforcing membrane on service conduit and onto vertical surface; notch reinforcing membrane to allow for better tie-in detail on vertical surface. Apply liquid membrane flashing over reinforcing membrane.
- .4 Install reinforcing membrane on vertical surface around service conduit and over previously installed reinforcing membrane. Apply liquid membrane flashing over second reinforcing membrane.
- .5 Apply finish coat of liquid membrane over dry, previously applied liquid membrane.
- .6 Apply liquid membrane flashing as recommended by the manufacturer, and following written instructions.

3.12 METAL FLASHING

- .1 Metal flashings are specified in Section 07 62 00 Sheet Metal Flashing and Trim. Co-ordinate this work with that section.

3.13 COMPLETION OF DAY'S WORK

- .1 Install water cut-offs at the end of each day's work; remove completely prior to continuing further roofing applications.
- .2 Inspect all laps of the membrane application to ensure they are properly bonded. Repair any deficiencies prior to leaving the site for the day.
- .3 Base sheet applications should not be left exposed overnight unless all seams are torch welded prior to leaving the work site.

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- .4 Provide a one (1) hour fire watch at the end of each day when torching membrane. Walk the day's entire production area to check for smoke and hot spots, using a hand held infrared thermometer. Provide subsequent watches at three (3) hour intervals for a period of twelve (12) hours.

3.14 GENERAL

- .1 Patching of the cap sheet membrane shall be carried out utilising patches with a minimum size of 450mm x 1000mm.
- .2 Minimum length of cap sheet on flat run of roof shall not be less than 1000mm.
- .3 Wrinkled or deformed ends of cap sheet rolls will not be tolerated and therefore must be discarded prior to application.
- .4 Following completion of new roofing, torch soften and apply a liberal application of approved bulk type mineral granules to cap sheet membrane edges where asphalt has extruded or flowed beyond clean lines and to all surface damage.
- .5 Splices in delivered rolls of membrane are to be removed. Cut back the roll 450mm on both sides of the splices and remove prior to installation.

3.15 TIE-INS

- .1 Ensure tie-in of roof vapour barrier, insulation and waterproofing to corresponding components in adjoining construction, both existing and new, including walls, parapets and roofs. Extend and connect vapour barrier, insulation and waterproofing as required for continuity of moisture and thermal protection, whether shown on drawings or not.

END OF SECTION

Section 07 62 00

SHEET METAL FLASHING AND TRIM

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Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 07 42 00 Concrete Panels
- Section 08 44 13 Glazed Aluminum Curtain Walls

1.2 REFERENCE STANDARDS

- .1 The Aluminum Association Inc. (AAI)
 - .1 AA Aluminum Design Manual 2015 Part VIII Guidelines for Aluminum Sheet Metal Work in Building Construction.
 - .2 AAI DAF45-2009, Designation System for Aluminum Finishes.
- .2 American Architectural Manufacturers Association (AAMA)
 - .1 AAMA 611-14 Voluntary Specifications for Anodized Architectural Aluminum.
 - .2 AAMA 621-02 Voluntary Specifications for High Performance Organic Coatings on Coil Coated Architectural Hot Dipped Galvanized (HDG) and Zinc-Aluminum Coated Substrates.
 - .3 AAMA 2603-15, Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.
 - .4 AAMA 2604-13 Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.
 - .5 AAMA 2605-13 Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.
- .3 American National Standards Institute (ANSI)
 - .1 ANSI/SPRI/FM 4435/ES-1, Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems 2011.
- .4 ASTM International (ASTM)
 - .1 ASTM A 240/A 240M-16, Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
 - .2 ASTM A 606/A 606M-15, Standard Specification for Steel, Sheet and Strip, High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, with Improved Atmospheric Corrosion Resistance.
 - .3 ASTM A 653/A 653M-15e1, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - .4 ASTM A 755/A 755M-16e1 Standard Specification for Steel Sheet, Metallic coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products.
 - .5 ASTM A 792/A 792M-10(2015) Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
 - .6 ASTM B 32-08(2014) Standard Specification for Solder Metal.
 - .7 ASTM B 209-14 Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
 - .8 ASTM B 370-12 Standard Specification for Copper Sheet and Strip for Building Construction.
 - .9 ASTM D 523-14 Standard Test Method for Specular Gloss.

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- .11 ASTM D 4587-11 Standard Practice for Fluorescent UV-Condensation Exposures of Paint and Related Coatings.
- .12 ASTM F 1667-15 Standard Specification for Driven Fasteners: Nails, Spikes and Staples.
- .5 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-51.32-M77, Sheathing, Membrane, Breather Type.
- .6 Canadian Roofing Contractors Association (CRCA)
 - .1 Roofing Specifications Manual 2012.
- .7 Canadian Sheet Steel Building Institute (CSSBI)
 - .1 CSSBI S8-2008 Quality and Performance Specification for Prefinished Sheet Steel Used for Building Products.
 - .2 CSSBI B17-2002 Barrier Series Prefinished Steel Sheet: Product Performance & Applications.
 - .3 CSSBI Sheet Steel Facts #12 2003 Fastener Guide for Sheet Steel Building Products.
- .8 Sheet Metal and Air Conditioning Contractors Association of North America (SMACNA)
 - .1 Architectural Sheet Metal Manual (2012)
 - .2 Residential Sheet Metal Guidelines (2001)

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's printed product literature including product specifications and technical data sheets for sheet metal flashing fasteners and accessory materials. Include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Samples:
 - .1 Submit samples of each type of sheet metal material, finishes and colour.

1.4 MOCK-UPS

- .1 Include flashings in mock-ups as specified for work of other affected sections.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Handle and store flashing materials to prevent creasing, buckling, scratching, or other damage.

Part 2 Products

2.1 PREFINISHED STEEL SHEET

- .1 Prefinished steel with factory applied two-coat polyvinylidene fluoride resin on specified steel sheet substrate conforming to ASTM A 755 and AAMA 621-02:
 - .1 Finished colour finished on both sides

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- .2 Colour to match existing
- .3 Specular gloss: 25 units +/- in accordance with ASTM D 523.
- .4 Exposed coating thickness: dry film coating system thickness not less than 22 micrometres.

- .2 Anodized Aluminum Flashing to ASTM B209M; Brake formed aluminum sheet metal of type and size to suit detailed conditions; sills min. 1.6mm thick.

2.2 ACCESSORIES

- .1 Isolation coating: alkali resistant bituminous paint.
- .2 Pourable sealer: proprietary two-part polyurethane pourable sealer designed for sealing penetration pockets.
 - .1 Maximum VOC limit 50 g/L to SCAQMD Rule 1168
- .3 Self-adhesive membrane underlay and tie-in membrane for metal flashings: To CSA A123.22 or ASTM D 1970,
- .4 Sealants: in accordance with Section 07 92 00 - Joint Sealants, in colour to match flashing finish colour.
- .5 Cleats and hook strips: of same material, and temper as sheet metal, minimum one-third width of secured flashing. Thickness same as sheet metal being secured.
- .6 Nails: of same material as sheet metal, ring thread flat head roofing nails of length and thickness suitable for [metal flashing] application.
- .7 Screws: of same material as sheet metal, Suitable for substrate and material being fastened, galvanized head, neoprene washer.
- .8 Flux: rosin, cut hydrochloric acid, or commercial preparation suitable for materials to be soldered.
- .9 Touch-up paint: as recommended by prefinished material manufacturer.

2.3 FABRICATION

- .1 Fabricate sheet steel flashings and other sheet steel work in accordance with applicable CRCA 'FL' series details
- .2 Form pieces in 2400 mm maximum lengths.
 - .1 Make allowance for expansion at joints.
- .3 Hem exposed edges on underside 12 mm.
 - .1 Mitre and seal corners with sealant.
- .4 Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.
- .5 Apply isolation coating to metal surfaces to be embedded in concrete or mortar.

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SHEET METAL FLASHING AND TRIM

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2.4 METAL FLASHINGS

- .1 Form flashings, copings and fascias

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

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

3.2 INSTALLATION

- .1 Install sheet metal work in accordance with CRCA FL series details.
- .2 Use concealed fastenings except where approved before installation.
- .3 Provide underlay under sheet metal.
 - .1 Secure in place and lap joints 100 mm.
 - .2 Provide self-adhesive membrane to tie into adjacent assemblies.
- .4 Lock end joints and caulk with sealant.
- .5 Where flashing installed with mechanical fasteners, install fasteners in slots or oversize holes to allow expansion and contraction of flashings.
- .6 Provide isolation coating or impervious self-adhesive membrane to separate aluminum items from concrete and masonry.

3.3 CLEANING

- .1 Proceed in accordance with Section 01 74 11 - Cleaning.
- .2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.
- .3 Leave work areas clean, free from grease, finger marks and stains.

END OF SECTION

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FIRE STOPPING

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.1 GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 09 21 16 Gypsum Board Assemblies

1.2 REFERENCE STANDARDS

- .1 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .2 National Research Council Canada (NRC)
 - .1 National Building Code of Canada 2015(NBC).
- .3 Underwriter's Laboratories of Canada (ULC)
 - .1 ULC-S115-1995, Fire Tests of Fire stop Systems.

1.3 DEFINITIONS

- .1 Fire Stop Material: device intended to close off opening or penetration during fire or materials that fill openings in wall or floor assembly where penetration is by cables, cable trays, conduits, ducts and pipes and poke-through termination devices, including electrical outlet boxes along with their means of support through wall or floor openings.
- .2 Single Component Fire Stop System: fire stop material that has Listed Systems Design and is used individually without use of high temperature insulation or other materials to create fire stop system.
- .3 Multiple Component Fire Stop System: exact group of fire stop materials that are identified within Listed Systems Design to create on site fire stop system.
- .4 Tightly Fitted; (ref: NBC Part 3.1.9.1(1) and 9.10.9.6(1)): penetrating items that are cast in place in buildings of noncombustible construction or have "0" annular space in buildings of combustible construction.
 - .1 Words "tightly fitted" should ensure that integrity of fire separation is such that it prevents passage of smoke and hot gases to unexposed side of fire separation.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00- Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings:
 - .1 Submit shop drawings to show location, proposed material, reinforcement, anchorage, fastenings and method of installation.
 - .2 Construction details should accurately reflect actual job conditions.
- .4 Samples:

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- .1 Submit duplicate 300 x 300 mm samples showing actual fire stop material proposed for project.
- .5 Quality assurance submittals:
 - .1 Test reports: in accordance with CAN-ULC-S101 for fire endurance and CAN-ULC-S102 for surface burning characteristics.
 - .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 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
 - .3 Manufacturer's Instructions: submit manufacturer's installation instructions and special handling criteria, installation sequence, cleaning procedures.
 - .4 Manufacturer's Field Reports: submit to manufacturer's written reports within 3 days of review, verifying compliance of Work, as described in PART 3 - FIELD QUALITY CONTROL.

1.5 QUALITY ASSURANCE

- .1 Qualifications:
 - .1 Installer: company specializing in fire stopping installations with 5 years.
- .2 Pre-Installation Meetings: convene pre-installation meeting one week prior to beginning work of this Section, with Consultant to:
 - .1 Verify project requirements.
 - .2 Review installation and substrate conditions.
 - .3 Co-ordination with other building subtrades.
 - .4 Review manufacturer's installation instructions and warranty requirements.
- .3 Site Meetings (if asked by the Consultant): as part of Manufacturer's Services described in PART 3 - FIELD QUALITY CONTROL, schedule site visits, to review Work, at any required stage.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Packing, shipping, handling and unloading:
 - .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Storage and Protection:
 - .1 Store materials in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Replace defective or damaged materials with new.

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.2 PRODUCTS

2.1 MATERIALS

- .1 Fire stopping and smoke seal systems: in accordance with CAN-ULC-S115.
 - .1 Asbestos-free materials and systems capable of maintaining effective barrier against flame, smoke and gases in compliance with requirements of CAN-ULC-S115 and not to exceed opening sizes for which they are intended and conforming to specified special requirements described in PART 3.
- .2 Service penetration assemblies: systems tested to CAN-ULC-S115.
- .3 Service penetration fire stop components: certified by test laboratory to CAN-ULC-S115.
- .4 Fire-resistance rating of installed fire stopping assembly in accordance with NBC.
- .5 Fire stopping and smoke seals at openings intended for ease of re-entry such as cables: elastomeric seal.
- .6 Fire stopping and smoke seals at openings around penetrations for pipes, ductwork and other mechanical items requiring sound and vibration control: elastomeric seal.
- .7 Primers: to manufacturer's recommendation for specific material, substrate, and end use.
- .8 Water (if applicable): potable, clean and free from injurious amounts of deleterious substances.
- .9 Damming and backup materials, supports and anchoring devices: to manufacturer's recommendations, and in accordance with tested assembly being installed as acceptable to authorities having jurisdiction.
- .10 Sealants for vertical joints: non-sagging.

.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 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 Prepare surfaces in contact with fire stopping materials and smoke seals 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.

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3.3 INSTALLATION

- .1 Install fire stopping and smoke seal material and components in accordance with manufacturer's certified tested system listing.
- .2 Seal holes or voids made by through penetrations, poke-through termination devices, and unpenetrated openings or joints to ensure continuity and integrity of fire separation are maintained.
- .3 Provide temporary forming as required and remove forming only after materials have gained sufficient strength and after initial curing.
- .4 Tool or trowel exposed surfaces to neat finish.
- .5 Remove excess compound promptly as work progresses and upon completion.

3.4 SEQUENCES OF OPERATION

- .1 Proceed with installation only when submittals have been reviewed.
- .2 Install floor fire stopping before interior partition erections.
- .3 Metal deck bonding: fire stopping to precede spray applied fireproofing to ensure required bonding.
- .4 Mechanical pipe insulation: fire stop system component.
 - .1 Ensure pipe insulation installation precedes fire stopping.

3.5 FIELD QUALITY CONTROL

- .1 Inspections: notify Consultant when ready for inspection and prior to concealing or enclosing fire stopping materials and service penetration assemblies.
- .2 Manufacturer's Field Services if required by the consultant:
 - .1 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

3.6 CLEANING

- .1 Proceed in accordance with Section 01 74 11- Cleaning.
- .2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.
- .3 Remove temporary dams after initial set of fire stopping and smoke seal materials.

3.7 SCHEDULE

- .1 Fire stop and smoke seal at:
 - .1 Penetrations through fire-resistance rated masonry, concrete, and gypsum board partitions and walls.
 - .2 Edge of floor slabs at curtain wall and precast concrete panels.
 - .3 Top of fire-resistance rated masonry and gypsum board partitions.
 - .4 Intersection of fire-resistance rated masonry and gypsum board partitions.
 - .5 Control and sway joints in fire-resistance rated masonry and gypsum board partitions and walls.

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- .6 Penetrations through fire-resistance rated floor slabs, ceilings and roofs.
- .7 Openings and sleeves installed for future use through fire separations.
- .8 Around mechanical and electrical assemblies penetrating fire separations.
- .9 Rigid ducts: fire stopping to consist of bead of fire stopping material between retaining angle and fire separation and between retaining angle and duct, on each side of fire separation.

END OF SECTION

1. **GENERAL**

1.1 **REFERENCES**

- .1 ASTM International
 - 1. ASTM C 920-14a, Standard Specification for Elastomeric Joint Sealants.
 - 2. ASTM D217-10, Standard Test Methods for Cone Penetration of Lubricating Grease.
- .2 Canadian General Standards Board (CGSB)
 - 1. CAN/CGSB-19.13-M87, Sealing Compound, One-component, Elastomeric, Chemical Curing.
 - 2. CAN/CGSB-19.17-M90, One-Component Acrylic Emulsion Base Sealing Compound.
 - 3. CAN/CGSB-19.21-M87, Sealing and Bedding Compound, Acoustical.
 - 4. CAN/CGSB-19.22-M89, Mildew-Resistant Sealing Compound for Tubs and Tiles.
 - 5. CAN/CGSB-19.24-M90, Multi-component, Chemical Curing Sealing Compound.
- .3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - 1. Material Safety Data Sheets (MSDS).

1.2 **ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for joint sealants and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Manufacturer's product to describe:
 - .1 Caulking compound.
 - .2 Primers.
 - .3 Sealing compound, each type, including compatibility when different sealants are in contact with each other.
- .2 Samples
 - 1. Submit 2 samples of each type of material and colour.
 - 2. Cured samples of exposed sealants for each colour where required to match adjacent material.
- .3 Manufacturer's Instructions:
 - 1. Submit instructions to include installation instructions for each product used.

1.3 **CLOSEOUT SUBMITTALS**

- .1 Operation and Maintenance Data: submit operation and maintenance data for incorporation into manual.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials off ground, indoors, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect joint sealants from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding, packaging materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

1.5 SITE CONDITIONS

- .1 Ambient Conditions:
 - 1. Proceed with installation of joint sealants only when:
 - a. Ambient and substrate temperature conditions are within limits permitted by joint sealant manufacturer or are above 4.4 degrees C.
 - b. Joint substrates are dry.
 - c. Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.
- .2 Joint-Width Conditions:
 - 1. Proceed with installation of joint sealants only where joint widths are more than those allowed by joint sealant manufacturer for applications indicated.
- .3 Joint-Substrate Conditions:
 - 1. Proceed with installation of joint sealants only after contaminants capable of interfering with adhesion are removed from joint substrates.

1.6 ENVIRONMENTAL REQUIREMENTS

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of Material Safety Data Sheets (MSDS) acceptable to Health Canada.

2. PRODUCTS

2.1 SEALANT MATERIALS

- .1 Do not use caulking that emits strong odours, contains toxic chemicals or is not certified as mould resistant in air handling units.
- .2 When low toxicity caulks 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.
- .3 Where sealants are qualified with primers use only these primers.

2.2 SEALANT MATERIAL DESIGNATIONS

- .1 Primer: in accordance with sealant manufacturer's written recommendations.
- .2 Non-corrosive and non-staining type, compatible with joint forming materials and sealant in accordance with sealant manufacturer's written recommendations.
- .3 Sealant material:
 - 1. Sealant materials shall figure on the list of approved products published by CGSB. In cases of sealant product approved with primer, only this type of primer shall be use with the sealant product.
- .4 Epoxide polyurethane terpolymer sealant :
 - .1 To CAN/CGSB-19.24-M90, non slumping; colours to be selected in manufacturer's standard range.
 - .2 Apply at junctions between exterior walls and adjacent surfaces, between windows and aluminum doors and exterior adjacent surfaces, and where indicated on drawings.
 - .3 Acceptable products :
 - .1 Dymeric by Tremco or approved equivalent.
 - .2 Sikaflex-2c NS/SL by Sika, or approved equivalent.
- .5 Rubber-based acoustical sealant:
 - .1 To CAN/CGSB-19.21-M87, non hardening, non strippable, non staining and consistant, with 290-310 penetration, in accordance with ASTM D217-10.
 - .2 Around gypsum boards, on metal framing, concealed position.
 - .3 Acceptable product :
 - .1 Acoustical sealant by Tremco, or approved equivalent.
- .6 Silicone sealant, mold-resistant :
 - .1 One part, to CAN/CGSB-19.22-M89, and FDA requirements, no colour, translucent.
 - .2 Generally, all exposed interior joints (except otherwise noted), between door frames and windows and other steel/aluminum works and interior adjacent surfaces, around built-in furniture, every mechanical/electrical items on walls and ceilings, around toilet and shower accessories, and for interior glazing installation.
 - .3 Acceptable product :
 - .1 786 by Dow Corning, or approved equivalent.

- .7 Polyurethane sealant no slumping :
 - .1 To CAN/CGSB-19.13-M87, ASTM C920-14a, NS shade, grade 25 and TT-S-00230C, grade A, curing with humidity.
 - .2 Under aluminum sills and as adhesive between materials with dissimilar expansion coefficient.
 - .3 Acceptable product :
 - .1 Sikaflex-1a by Sika, or approved equivalent.
- .8 Self-levelling polyurethane sealant :
 - .1 To CAN/CGSB-19.13-M87, ASTM C920-14a, type S, shade P, grade 25 and TT-S-00230C, grade A, curing with humidity, one part.
 - .2 For concrete slabs joints and junctions between concrete walls or columns and concrete slabs.
 - .3 Acceptable product :
 - .1 Sikaflex-1C SL by Sika, or approved equivalent.
- .9 Acrylic latex silicone sealant/mold-resistant :
 - .1 To CGSB 19-17-M90, for interior joints around door frames and exposed joints on walls, to be painted.
 - .2 Acceptable product :
 - .1 Tremflex 834 by Tremco, or approved equivalent.
- .10 Polyurethane foam adhesive sealant : caulking polymer, without CFC, to infill space between aluminium or steel frames and adjacent surfaces (do not exposed).
 - .1 Acceptable product :
 - .1 CF128 by Hilti, or approved equivalent.

2.3 BACKUP MATERIALS

- .1 Preformed compressible and non-compressible back-up materials: polyethylene foam, extruded closed cell foam backer rod, size: oversize 30 to 50 %.
 - .1 Acceptable product:
 - .1 Etafoam 220 round by Dow Chemical Co., ou approved equivalent.

2.4 JOINT CLEANER

- .1 Non-corrosive and non-staining type, compatible with joint forming materials and sealant in accordance with sealant manufacturer's written recommendations.
- .2 Primer: in accordance with sealant manufacturer's written recommendations.

3. EXECUTION

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for joint sealants installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate.
 - .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 SURFACE PREPARATION

- .1 Surface preparation: Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter which may impair Work. Dry joint surfaces.
- .2 Using wire brush, grinding wheel, or sand blast, remove rust, scale and other coats covering surface of ferrous metal.
- .3 Using appropriate joint cleaning product, remove oil, grease, and other coats covering surfaces of non-ferrous metal.
- .4 Prepare concrete and masonry surfaces, and glazed/vitreous surfaces, in accordance with sealant manufacturer's instructions.
- .5 Examine joint sizes and adjust dimensions so its depth is equal to half its width, and this for the case of a minimal 6mm depth and width and a maximal 25mm width.
- .6 Install backup material to obtain the recommended depth for the specific filling product.
- .7 Before applying primer and sealant product, cover, as required, adjacent surfaces to avoid tarnish.
- .8 Apply non-adhesive tape in accordance with manufacturer's instructions.
- .9 Immediately before applying sealant material, apply primer on lateral surfaces of joint, in accordance with sealant manufacturer's instructions.

3.3 PRIMING

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

3.4 BACKUP MATERIAL

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

3.5 MIXING

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

3.6 APPLICATION

- .1 Sealant:
 - .1 Apply sealant in accordance with manufacturer's written instructions.
 - .2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.
 - .3 Apply sealant in continuous beads.
 - .4 Apply sealant using gun with proper size nozzle.
 - .5 Use sufficient pressure to fill voids and joints solid.
 - .6 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.
 - .7 Tool exposed surfaces before skinning begins to give slightly concave shape.
 - .8 Remove excess compound promptly as work progresses and upon completion.
- .2 Curing
 - 1. Cure sealants in accordance with sealant manufacturer's instructions.
 - 2. Do not cover up sealants until proper curing has taken place.

3.7 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - 1. Leave Work area clean at end of each day.
 - 2. Clean adjacent surfaces immediately.
 - 3. Remove excess and droppings, using recommended cleaners as work progresses.
 - 4. Remove masking tape after initial set of sealant.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.8 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by joint sealants installation.

END OF SECTION

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METAL DOOR FRAMES

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1. GENERAL

1.1 REFERENCES

- .1 American Society for Testing and Materials International (ASTM)
 1. ASTM A 653/A 653M-06a, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 2. ASTM A1008/A1008M-15, Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low Alloy with Improved Formability, Solution Hardened, and Bake Hardenable.
 3. ASTM C1289-16, Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
 4. ASTM E330/E330M-14, Standard Specification for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
- .2 Canadian General Standards Board (CGSB)
 1. CAN/CGSB-1.181-99, Ready-Mixed Organic Zinc-Rich Coating.
 2. CGSB 41-GP-19Ma-84, Rigid Vinyl Extrusions for Windows and Doors.
 3. CGSB 31-GP-107Ma, Non-Inhibited Phosphoric Acid Base Metal Conditioner and Rust Remover.
- .3 Canadian Standards Association (CSA International)
 1. CSA-G40.20-04/G40.21-04, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 2. CSA W59-03, Welded Steel Construction (Metal Arc Welding).
- .4 Canadian Steel Door Manufacturers' Association (CSDMA)
 1. CSDMA, Recommended Specifications for Commercial Steel Doors and Frames, 2000.
 2. CSDMA, Selection and Usage Guide for Commercial Steel Doors, 1990.
- .5 National Fire Protection Association (NFPA)
 1. NFPA 80-99, Standard for Fire Doors and Fire Windows.
 2. NFPA 252-03, Standard Methods of Fire Tests of Door Assemblies.
- .6 Underwriters' Laboratories of Canada (ULC)
 1. CAN4-S104-M80, Standard Method for Fire Tests of Door Assemblies.

1.2 SYSTEM DESCRIPTION

- .1 Design Requirements
 - .1 Design exterior frame assembly to accommodate to expansion and contraction when subjected to minimum and maximum surface temperature of -35 degrees C to 35 degrees C.
 - .2 Maximum deflection for exterior steel entrance screens under wind load of 1.2 kPa not to exceed 1/175th of span.
 - .3 Steel fire rated doors and frames: labelled and listed by an organization accredited by Standards Council of Canada in conformance with CAN4-S104 and NFPA 252 for ratings specified or indicated.
 - .4 Provide fire labelled frames for openings requiring fire protection ratings. Test products in conformance with CAN4-S104, NFPA 252 and listed by nationally recognized agency having factory inspection services.

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1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Provide product data: in accordance with Section 01 33 00 - Submittal Procedures.
- .3 Provide shop drawings: in accordance with Section 01 33 00 - Submittal Procedures.
 - 1. Submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada.
 - 2. Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, glazed, arrangement of hardware, fire rating and finishes.
 - 3. Indicate each type frame material, core thickness, reinforcements, glazing stops, location of anchors and exposed fastenings and finishes.
 - 4. Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.
 - 5. Submit test and engineering data, and installation instructions.
- .4 Provide samples in accordance with Section 01 33 00 - Submittal Procedures.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with manufacturer's instructions.
- .2 Waste Management and Disposal:
 - .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

2. PRODUCTS

2.1 MATERIALS

- .1 Hot dipped galvanized steel sheet: to ASTM A653M, ZF75, minimum base steel thickness in accordance with CSDMA Table 1 - Thickness for Component Parts.
- .2 Reinforcement, channel: to CSA G40.20/G40.21, Type 44W, coating designation to ASTM A653M, ZF75.
- .3 Composites: balance of core materials used in conjunction with lead: in accordance with manufacturers' proprietary design.

2.2 FRAME MATERIALS

- .1 Steel sheet: commercial grade, to ASTM A1008/A1008M, class 1, with finish in accordance with ASTM A653/A653M zinc coated (W25) wiping application.
- .2 Exterior frames: gauge 16, welded, with thermal break. Interior frames: gauge 16, welded.
- .3 Hardware reinforcement: steel thickness of 4,4mm minimum.
- .4 Ground anchors, stiffening blocking, and wall anchors: steel thickness of 1,6mm minimum.
- .5 Hold concrete back plates: steel gauge 20 (0,8mm) minimal thickness.

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- .6 Jamb anchors: steel sheet in accordance with ULC and NFPA 80 standards.
- .7 Glass bead: steel thickness of 1mm and abuse resistant.
- .8 Reinforcement trim: steel thickness of 3.5mm and in accordance with CSA-G40.20-F04/G40.21.
- .9 Door stop: black neoprene.
- .10 Primer: to CAN/CGSB-1.181-99.
- .11 Mortar: in accordance with NFPA 80 standards for fire-rated frames.

2.3 PRIMER

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

2.4 PAINT

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

2.5 ACCESSORIES

- .1 Door silencers: single stud rubber/neoprene type.
- .2 Exterior horizontal caps: rigid polyvinylchloride extrusion conforming to CGSB 41-GP-19Ma steel.
- .3 Fabricate glazing stops as formed channel, minimum 16 mm height, accurately fitted, butted at corners and fastened to frame sections with counter-sunk oval head sheet metal screws.
- .4 Door bottom seal: refer to Section 08 71 00.
- .5 Metallic paste filler: to manufacturer's standard.
- .6 Fire labels: metal rivited.
- .7 Sealant: refer to Section 07 92 00.

2.6 FRAMES FABRICATION GENERAL

- .1 Fabricate frames in accordance with CSDMA specifications.
- .2 Fabricate frames to profiles and maximum face sizes as indicated.
- .3 Exterior frames: 1.6 mm welded and thermally broken type construction.
- .4 Interior frames: 1.6 mm welded type construction.
- .5 Blank, reinforce, drill and tap frames for mortised, templated hardware, electronic hardware using templates provided by finish hardware supplier. Reinforce frames for surface mounted hardware.

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- .6 Prepare frame for door silencers, 3 for single door, 2 at head for double door.
- .7 Conceal fastenings except where exposed fastenings are indicated.
- .8 Provide factory-applied touch up primer at areas where zinc coating has been removed during fabrication.
- .9 Insulate exterior frame components with polyurethane insulation.
- .10 Steel frames shall be reinforced with 3mm steel plates for hinges, door closers and strikes installation.

2.7 FRAME ANCHORAGE

- .1 Provide appropriate anchorage to floor and wall construction.
- .2 Steel frames shall have a minimum of 6 anchor points at partitions and structural slabs for increased solidity.
- .3 Anchorage of steel frames to floors and partitions shall be made of 1.2mm thick laminated steel.
- .4 Locate each wall anchor immediately above or below each hinge reinforcement on hinge jamb and directly opposite on strike jamb.
- .5 Provide 2 anchors for rebate opening heights up to 1520 mm and 1 additional anchor for each additional 760 mm of height or fraction thereof.

2.8 FRAMES : WELDED TYPE

- .1 Welding in accordance with CSA W59.
- .2 Accurately mitre or mechanically joint frame product and securely weld on inside of profile.
- .3 Cope accurately and securely weld butt joints of mullions, transom bars, centre rails and sills.
- .4 Grind welded joints and corners to a flat plane, fill with metallic paste and sand to uniform smooth finish.
- .5 Securely attach floor anchors to inside of each jamb profile.
- .6 Weld in 2 temporary jamb spreaders per frame to maintain proper alignment during shipment.

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 - GENERAL

- .1 Install labelled steel fire rated doors and frames to NFPA 80 except where specified

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otherwise.

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

3.3 FRAME INSTALLATION

- .1 Set frames plumb, square, level and at correct elevation.
- .2 Secure anchorages and connections to adjacent construction, in accordance with NFPA 80 requirements.
- .3 Brace frames rigidly in position while building-in. Install temporary horizontal wood spreader at third points of door opening to maintain frame width. Provide vertical support at centre of head for openings over 1200 mm wide. Remove temporary spreaders after frames are built in.
- .4 Make allowances for deflection of structure to ensure structural loads are not transmitted to frames.
- .5 Caulk perimeter of frames between frame and adjacent material.

3.4 FINISH REPAIRS

- .1 Touch up with primer finishes damaged during installation.
- .2 Fill exposed frame anchors and surfaces with imperfections with metallic paste filler and sand to a uniform smooth finish.

END OF SECTION

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ALUMINUM DOORS

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Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 08 50 00 Glazed Aluminum Curtain Walls
- .2 Section 08 80 00 Glazing

1.2 REFERENCE STANDARDS

- .1 American Architectural Manufacturers Association (AAMA)
 - .1 AAMA 609/610-15, Cleaning and Maintenance Guide for Architecturally Finished Aluminum.
- .2 ASTM International (ASTM)
 - .1 ASTM E 330-E330M-14, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
- .3 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-12.1-M90], Tempered or Laminated Safety Glass.
 - .2 CAN/CGSB-12.20-M89], Structural Design of Glass for Buildings.
- .4 CSA Group (CSA)
 - .1 CSA G40.20/G40.21-04(R2009), General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - .2 CAN/CSA G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
- .5 The Master Painters Institute (MPI)
 - .1 Architectural Painting Specification Manual - current edition.
- .6 Green Seal Environmental Standards (GS)
 - .1 GS-11-11, Paints and Coatings.
- .7 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
 - .1 SCAQMD Rule 1168-[A2005], Adhesives and Sealants Applications.
- .8 Underwriters Laboratories (UL)
 - .1 UL 2761-2011 Sealants and Caulking Compounds.

1.3 ADMINISTRATIVE REQUIREMENTS

- .1 Pre-Installation Meetings:
 - .1 Convene pre-installation meeting 1 week prior to beginning work of this Section with Consultant:
 - .1 Verify project requirements.
 - .2 Review installation and substrate conditions.
 - .3 Co-ordination with other construction subtrades.
 - .4 Review manufacturer's written installation instructions and warranty requirements.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for doors and frames and include product characteristics, performance criteria, physical size, finish

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and limitations.

- .3 Shop Drawings:
 - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Ontario, Canada.
 - .2 Indicate materials and profiles and provide full-size, scaled details of components for each type of door and frame. Indicate:
 - .1 Interior trim and exterior junctions with adjacent construction.
 - .2 Junctions between combination units.
 - .3 Elevations of units.
 - .4 Core thicknesses of components.
 - .5 Type and location of exposed finishes, method of anchorage, number of anchors, supports, reinforcement, and accessories.
 - .6 Location of caulking.
 - .7 Each type of door system including location.
 - .8 Arrangement of reinforcing for hardware and joints.
 - .9 Arrangement of hardware and required clearances.
- .4 Samples:
 - .1 Submit for review and acceptance of each unit.

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 cleaning and maintenance of aluminum finishes for incorporation into manual.
- .3 Warranty Documentation: submit warranty documents specified.

1.6 QUALITY ASSURANCE

- .1 Manufacturers Reports:
 - .1 Manufacturer's Field Reports: submit manufacturer's written reports within 3 days of review, verifying compliance of Work, as described in Part 3 - FIELD QUALITY CONTROL.
- .2 Certifications: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.7 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 Apply temporary protective coating to finished surfaces. Remove coating after erection. Use easy to remove, residue free coatings.
 - .2 Leave protective covering in place until final cleaning of building.
- .3 Storage and Handling Requirements:
 - .1 Store materials indoors, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect aluminum doors and frames from [nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.

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1.8 WARRANTY

- .1 Manufacturer's warranty: Submit, for Departmental Representative, Consultant acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty in addition to and not limit other rights Owner may have under Contract Documents.

Part 2 Products

2.1 DESIGN CRITERIA

- .1 Design doors in exterior curtain walls to:
 - .1 Accommodate expansion and contraction within service temperature range of -35 to 35 degrees C.
 - .2 Limit deflection of mullions to maximum 1/175th of clear span when tested to ASTM E 330 under wind load of 1.2 kPa.
 - .3 Movement within system.
 - .4 Movement between system and perimeter framing components or substrate.
- .2 Size glass thickness and glass unit dimensions to limits in accordance with CAN/CGSB-12.20.

2.2 MATERIALS

- .1 Aluminum extrusions: to Aluminum Association AA 6063-T5 anodizing quality.
- .2 Sheet aluminum: to Aluminum Association alloy AA 5005 -H32 anodizing quality.
- .3 Steel reinforcement: to CSA G40.20/G40.21, grade 300 W.
- .4 Fasteners: aluminum finished to match adjacent material.
- .5 Weatherstrip: rubber
- .6 Door bumpers: black neoprene.
- .7 Door bottom seal: door seal of anodized extruded aluminum frame and vinyl weather seal, surface mounted.
- .8 Isolation coating: bituminous paint
- .9 Glass: tempered glass to CAN/CGSB-12.1,
- .10 Sealants: colour to match aluminum finish.

2.3 ALUMINUM DOORS

- .1 Acceptable Product: Fully thermally broken Entrance door by Alumicor, or equivalent approved by Consultant prior to Tender closing.

Product: Thermaporte 7700 – T400A

- .1 Door stiles nominal 101.4 mm
- .2 Top rail nominal 98.4 mm
- .3 Bottom rail nominal 260.4 mm

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- .4 Reinforce mechanically-joined corners of doors to produce sturdy door unit.
- .5 Glazing stops: interlocking snap-in type for dry glazing. Exterior stops: tamperproof type.
- .6 Supply thermally broken doors for exterior.
- .2 Hardware:
 - .1 The hardware list is provided to help establish the generalized type and function of the items required, it is not to be interpreted as a complete list or for quantity. The contractor must verify the list and the plans and provide any additional hardware items that are not in the list but that is required to complete door installation. All hardware to be ANSI Grade 1 Commercial.
 - .2 Continuous geared hinge: Extruded aluminum hinge
 - .3 Pull: 25.4mm Ø pull handle, concealed mounting, 12" (304.8mm) centers
 - .4 Paddle activator: 4" (101.6mm) X 5" (127mm)
 - .5 Latch lock: Adams Rite 4512 latch lock, dead latch lock 1 1/8"(28.6mm) back set
Strike for latch lock 4902-01 flat face single doors frame mount.
Sargent Locks to match School Board standard, keyed to suit school keying.
 - .6 Surface mounted closer: LCN 4021 Smoothee
 - .7 Weather stripping: Full perimeter rubber seals, Thermal door sweep A at sill.
 - .8 Thermally broken aluminum threshold, 155mm depth minimum, full width of rough opening.

2.5 ALUMINUM FINISHES

- .1 Exterior Finish to be selected from Standard Anodize Colors.
Interior to be clear anodized.

2.7 FABRICATION

- .1 Doors and framing by same manufacturer.
- .2 Fabricate doors and frames to profiles and maximum face sizes as indicated.
- .3 Provide structural steel reinforcement as required.
- .4 Fit joints tightly and secure mechanically.
- .5 Conceal fastenings.
- .6 Mortise, reinforce, drill and tap doors, frames and reinforcements to receive hardware using templates,
- .7 Isolate aluminum from direct contact with dissimilar metals, concrete and masonry.

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Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts acceptable for aluminum doors and frames 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 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 Install doors and hardware in accordance with hardware templates and manufacturer's instructions.
- .3 Adjust door components to ensure smooth operation.

3.3 FIELD QUALITY CONTROL

- .1 Have manufacturer of products supplied under this Section review Work involved in handling, installation/application, protection and cleaning of its product[s], and submit written reports in acceptable format to verify compliance of Work with Contract.
- .2 Manufacturer's Field Services: provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.
- .3 Schedule site visits:
 - .2 Twice during progress of Work at 25% and 60% complete.
 - .3 Upon completion of Work, after cleaning carried out.
- .4 Obtain reports within 3 days of review and submit.

3.4 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
 - .2 Perform cleaning of aluminum components in accordance with AAMA 609.1 - Voluntary Guide Specification for Cleaning and Maintenance of Architectural Anodized Aluminum.
 - .3 Perform cleaning as soon as possible after installation to remove construction and accumulated environmental dirt.
 - .4 Clean aluminum with damp rag and approved non-abrasive cleaner.
 - .5 Remove traces of primer, caulking, epoxy and filler materials; clean doors and frames.
 - .6 Clean glass and glazing materials with approved non-abrasive cleaner.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.0 PROTECTION

- .1 Protect installed products and components from damage during construction.

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- .2 Repair damage to adjacent materials caused by aluminum door and frame installation.

END OF SECTION

1. GENERAL

1.1 SUMMARY OF WORK

- .1 Work Included: The work of this Section includes the provision of all labour, materials, equipment and services required to fabricate wood slab doors & transoms, as indicated on the drawings, as specified herein and as required for a complete project

- .1 Site measure doors that are to be installed in existing frames set in masonry.

1.2 REFERENCES

- .1 Architectural Woodwork Manufacturers' Association of Canada (AWMAC):
Architectural Woodwork Standards, 1st. Edition, 2009 (referred to hereinafter as "AWS").

1.3 WARRANTY

- .1 Doors and transoms shall be warranted against manufacturing defects for a period of **three (3) years** from the date of Substantial Performance. Where defects occur, the contractor shall be responsible for all costs, including painting, hanging and installing hardware, associated with replacing the defective doors.

2. PRODUCTS

2.1 MATERIALS

- .1 Doors: Flush solid core wood interior doors to AWS Section 9, door type PC-5, custom grade, as follows:
- (1) Thickness: 45 mm.
 - (2) Construction: framed core of extruded particleboard to ANSI A208.1, Grade LD-1 or LD-2. Stiles and rails securely bonded to core then entire unit abrasive planed before veneering.
 - (3) Top and bottom rails: Minimum 21 mm thick after factory fitting, one-piece or laminated wood without voids or telegraphing.
 - (4) Stiles: Minimum 25 mm thick after factory fitting, solid or laminated wood.
 - (5) Crossband: Nominal 1.6 mm thick one-piece wood, species at the option of the fabricator.
 - (6) Face skins: White birchwood species veneer, flat cut, random slip matched, Grade A. There shall be no sharp colour contrasts between adjacent flitches.
 - (7) Edge detail: AWS Type A, Solid white birch to match face veneer
 - (8) Adhesives:
 - (a) Face adhesive: Type I (waterproof).
 - (b) Core assembly adhesive: Type II (water-resistant).

2.2 FABRICATION

- .1 Fabricate doors and panels in accordance with AWS Section 9
- .2 Bevel vertical edges of single acting doors 3 mm on lock side and 1.5 mm on hinge side.
- .3 Fabricate work square, plumb, straight, true and accurately fitted.

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 DOOR INSTALLATION

- .1 Install doors and hardware in accordance with ANSI/DHI A115 IG and manufacturer's Instructions
- .2 Install doors and hardware in accordance with hardware templates and manufacturer's instructions and Section 08 71 00 - Door Hardware.
- .3 Provide even margins between doors and jambs and doors and finished floor as follows.
 - .1 Hinge side & top: 1.0 mm.
 - .2 Latchside: 1.5 mm.
 - .3 Finished floor: 13 mm.
- .4 Seal all four edges immediately for fitting, including areas routed for concealed closers and other hardware

END OF SECTION

.1 GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 07 13 52 Modified Bituminous Sheet Waterproofing
- .2 Section 07 92 00 Joint Sealants
- .3 Section 08 80 50 Glazing

1.2 REFERENCE STANDARDS;

- .1 Aluminum Association (AA)
 - .1 AA DAF 45-03(R2009), Designation System for Aluminum Finishes.
- .2 American Architectural Manufacturers Association (AAMA)
 - .1 AAMA CW-10-04, Care and Handling of Architectural Aluminum From Shop to Site.
 - .2 AAMA T1R-A1-04, Sound Control for Fenestration Products.
 - .3 AAMA 611-98, Voluntary Specifications for Anodized Finishes Architectural Aluminum.
 - .4 AAMA 612-02, Voluntary Specifications, Performance Requirements, and Test Procedures for Combined Coatings of Anode Oxide and Transparent Organic Coatings on Architectural Aluminum.
 - .5 AAMA 2603-02, Voluntary Specification Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.
 - .6 AAMA 2604-05, Voluntary Specification Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.
- .3 ASTM International
 - .1 ASTM A36/A36M-08, Specification for Carbon Structural Steel.
 - .2 ASTM A123/A123M-09, Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - .3 ASTM A167-99(2009), Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
 - .4 ASTM A653/A653M-09a, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 - .5 ASTM B209-07, Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
 - .6 ASTM B221-08, Specification for Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
 - .7 ASTM E413-04, Classification for Rating Sound Insulation.
- .4 CSA International
 - .1 CSA G40.20/G40.21-04(R2009), General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

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- .2 CSA S136-07, North American Specification for the Design of Cold Formed Steel Structural Members.
- .3 CAN/CSA-S157/S157.1-05, Strength Design in Aluminum/Commentary on CAN/CSA-S157, Strength Design in Aluminum.
- .4 CSA W59.2-M1991(R2008), Welded Aluminum Construction.
- .5 Environmental Choice Program (ECP)
 - .1 CCD-045-95(R2005), Sealants and Caulking Compounds.
 - .2 CCD-047-98(R2005), Architectural Surface Coatings.
 - .3 CCD-048-98(R2006), Surface Coatings - Recycled Water-borne.
- .6 National Research Council Canada (NRC)
 - .1 National Building Code of Canada 2015 (NBC).
- .7 Society for Protective Coatings (SSPC)
 - .1 SSPC - Paint 20-02(R2004), Zinc Rich Coating, Type I - Inorganic and Type II - Organic.
 - .2 SSPC - Paint 25 - 97(R2004)BCS, Zinc Oxide, Alkyd, Linseed Oil and Primer for Use Over Hand Cleaned Steel Type 1 and Type 2.
- .8 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
 - .1 SCAQMD Rule 1113-A2007, Architectural Coatings.
 - .2 SCAQMD Rule 1168-A2005, Adhesives and Sealants Applications.

1.3 ADMINISTRATIVE REQUIREMENTS

- .1 Co-ordination: co-ordinate work of this Section with installation of components or materials.
- .2 Arrange for site visit prior to start of Work to examine existing site conditions adjacent to demolition Work.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00- Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for curtain wall components, anchorage and fasteners, glass and infill, and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings:
 - .1 Indicate system dimensions, framed opening requirements and tolerances, adjacent construction, anchor details, affected related Work, and field welding required.
- .4 Delegated Design Submittals:
 - .1 Include framing member structural and physical characteristics, calculations, dimensional limitations, special installation requirements.

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1.5 CLOSEOUT SUBMITTALS

- .1 Operation and Maintenance Data: submit operation and maintenance data for glazed aluminum curtain wall for incorporation into manual.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- .1 Extra Stock Materials:
 - .1 Supply extra stock materials of glass units in accordance with Section 01 78 00- Closeout Submittals.
 - .2 Deliver to Departmental Representative, upon completion of work of this Section.
 - .3 Store where directed by Departmental Representative.

1.7 QUALITY ASSURANCE

- .1 Regulatory Requirements:
 - .1 Conform to applicable code for sound transmission requirements.

1.8 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 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 Handle work of this Section in accordance with AAMA CW-10.
 - .2 Store materials indoors, in dry location, off ground and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .3 Store and protect aluminum glazed curtain wall components from nicks, scratches, and blemishes.
 - .4 Replace defective or damaged materials with new.

1.9 AMBIENT CONDITIONS

- .1 Install sealants when ambient temperature is above 5 degrees C minimum.
- .2 Maintain this minimum temperature during and for 48 hours minimum after installation of sealants.

1.10 WARRANTY

- .1 Contractor hereby warrants that glazed aluminum curtain wall will function as specified in accordance with CCDC 24, but for 60 months.

2 PRODUCTS

2.1 FABRICATION

- .1 Fabricate system components with minimum clearances and shim spacing around perimeter of assembly. Enable installation and dynamic movement of perimeter seal.

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- .2 Accurately fit and secure joints and corners. Make joints flush, hairline, and weatherproof
- .3 Prepare components to receive anchor devices. Install anchors.
- .4 Arrange fasteners and attachments to ensure concealment from view.
- .5 Prepare system components to receive exterior doors, and hardware.
- .6 Reinforce framing members for external imposed loads.
- .7 Visible manufacturer's identification labels not permitted.
- .8 Finishes:
 - .1 Exterior exposed aluminum surfaces: to AAMA A41 or A42 or A43, anodized, 0.7 mils thick or greater (Architectural Class I).

2.2 CURTAIN WALL SYSTEM

.1 CW – ALUMINUM CURTAIN WALL

Full thermally broken curtain wall system, 63.5 mm sightline, 100 mm back member mullion depth, clear anodized aluminum finish.

Acceptable Products:

Alumicor Therma Wall TW2600, or equivalent by Kawneer.
Alternates to be presented and approved prior to tender closing.

- .2 All horizontal sections shall form equalized pressure and sealed gutter members.
- .3 Provide brackets and all anchoring to building structure, anchors shall have three-way adjustment. Touch up painting of welded areas shall be done on site.

2.3 PRESSURE PLATES AND CAPS (PRESSURE PLATE COVERS)

Vertical Mullions: 152mm (6") deep pressure plate cover (Alumicor part JC3XX). Allow for 4 custom paint colours to be shop allied powder coating paint.

Horizontal Mullion: Standard pressure plate cover depth. Finish to be selected from Standard Anodize Colors.

2.4 INSULATED SPANDREL PANELS

- .1 At exposed exterior face of panel, provide 6mm thick opaque spandrel glass. Refer to Section 08 80 00 Glazing.

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- .2 Insulate spandrel panels (back pan). Curtainrock semi rigid insulation as manufactured by Rockwool. Thickness shall match the full depth of the back-pan, depth of mullion.
- .3 Where back up spandrels panels are exposed to view in the building interior, 2mm thick aluminum sheets shall be used, with finish to match the window frame.
- .4 Where back up spandrels are not exposed to view use a 20 gauge galvanized sheet at the interior face of panel.

2.5 AIR / WEATHER BARRIER SELF ADHERING MEMBRANE

- .1 Equip window frames with site installed air / weather barrier material for sealing to building as follows:
 - .1 Material: Compatible with materials to provide required air tightness control throughout exterior envelope assembly.
 - .2 Material width: adequate to provide required air tightness control to building from interior.

.3 EXECUTION

3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for aluminum curtain wall installation in accordance with manufacturer's written instructions.
 - .1 Verify dimensions, tolerances, and method of attachment with other work.
 - .2 Verify wall openings and adjoining air barrier and vapour retarder materials are ready to receive work of this Section.
 - .3 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .4 Proceed with installation only after unacceptable conditions have been remedied.

3.2 INSTALLATION (GENERAL)

- .1 Install curtain wall system in accordance with manufacturer's instructions.
- .2 Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.
- .3 Use alignment attachments and shims to permanently fasten system to building structure. Clean weld surfaces; apply protective primer to field welds and adjacent surfaces.
- .4 Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances and align with adjacent work.
- .5 Install glass in accordance with Section 08 80 50- Glazing
- .6 Install perimeter sealant, backing materials, and installation criteria in accordance with Section 07 92 00- Joint Sealants.

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3.3 INSTALLATION OF CURTAIN WALL SYSTEMS

- .1 Install windows in accordance with reviewed shop drawings. CAN/CGSB-A440.3-98 and to CAN/CGSB-63.14-M89.
- .2 Provide all steel angles, brackets, supports and anchors required for the complete installation.
- .3 Install windows plumb, level, square, free from warp, twist or other defect, and anchor securely to provide complete adequate resistance to stresses expected in service.
- .4 Make adequate provision for thermal expansion of the window.
- .5 Secure and shim windows with non-corrosive and inorganic materials. Anchors, clips, blocking, shims, and all other attachments shall be concealed. Provide all fastenings and clips required for positive fastening of frames to concrete block wall and/or steel stud wall.
- .6 Fasteners at window heads shall allow for minimum 12 mm deflection of the building structure.
- .7 Install, lap self adhering air / weather barrier onto all surfaces of the perimeter of the curtain wall frame to ensure a continuous air seal between the adjacent construction and curtain wall assembly.

3.4 SILL INSTALLATION

- .1 Aluminum sills, heads and jambs shall be 2 mm thick break formed aluminum sheet metal of type and size as detailed and/or to suit job conditions, minimum 2 mm thick, complete with joint covers, jamb drip deflectors, anchoring devices and end pieces. Colour of sills to match window colour.
- .2 Install sills with uniform wash to exterior, level in length, straight in alignment with plumb upstands and faces. Use one piece at each location.
- .3 Secure sills in place with anchoring devices located at ends and evenly spaced 600 mm o/c in between.
- .4 Fasten drip deflectors with self tapping Installation stainless steel screws.

3.5 SITE TOLERANCES

- .1 Maximum variation from plumb: 1.5mm/m non-cumulative.
- .2 Maximum misalignment of two adjoining members abutting in plane: 0.8mm.
- .3 Maximum sealant space between curtain wall and adjacent construction: 13mm.

3.6 FIELD QUALITY CONTROL

- .1 Manufacturer's Field Services:
 - .1 Obtain written report from manufacturer of curtain wall verifying compliance of Work, in handling, installing, applying, protecting and cleaning of products, and submit written reports in acceptable format to verify compliance of Work with Contract.

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GLAZED ALUMINUM CURTAIN WALLS

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- .2 Submit manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.
- .3 Schedule site visits to review Work at stages listed:
 - .1 Once during progress of Work at 25% complete.
 - .2 Upon completion of Work, after cleaning is carried out.

3.7 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11- Cleaning.
 - .1 Leave Work area clean at end of each day.
 - .2 Remove protective material from prefinished aluminum surfaces.
 - .3 Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean.
 - .4 Remove excess sealant by moderate use of mineral spirits or other solvent acceptable to sealant manufacturer.
 - .5 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11- Cleaning.

3.8 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by glazed aluminum curtain wall installation.
- .3 Install temporary security boarding on all openings that are left open when the Contractor is not present on site.

END OF SECTION

Section 08 71 10

DOOR HARDWARE

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1 GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 08 14 16 Flush Wood Doors
- .2 Section 08 11 00 Metal Door Frames

1.2 REFERENCES

- .1 CSDMA, Recommended Dimensional Standards for Commercial Steel Doors and Frames
- .2 Canadian General Standards Board (CGSB).
 - .1 CAN/CGSB-69.18/ANSI/BHMA A156.1, Butts and Hinges.
 - .2 CAN/CGSB-69.19/ANSI/BHMA A156.3, Exit Devices.
 - .3 CAN/CGSB-69.20/ANSI/BHMA A156.4, Door Controls (Closers).
 - .4 CAN/CGSB-69.21/ANSI/BHMA A156.5, Auxiliary Locks and Associated Products.
 - .5 CAN/CGSB-69.22/ANSI/BHMA A156.6, Architectural Door Trim.
 - .6 CAN/CGSB-69.24/ANSI/BHMA A156.8, Door Controls - Overhead Holders.
 - .7 CAN/CGSB-69.28/ANSI/BHMA A156.12, Interconnected Locks and Latches.
 - .8 CAN/CGSB-69.32/ANSI/BHMA A156.16, Auxiliary Hardware.
 - .9 CAN/CGSB-69.34/ANSI/BHMA A156.18, Materials and Finishes.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for door hardware and include product characteristics, performance criteria, physical size, finish 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.
 - .2 Indicate specified hardware, including make, model, material, function, size, finish and other pertinent information.
 - .5 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
 - .6 Manufacturer's Instructions: submit manufacturer's installation instructions.

1.4 CLOSEOUT SUBMITTALS

- .1 Submit:
 - .1 Operation and Maintenance Data: Provide operation and maintenance data for door closers, locksets, door holders, electrified hardware and fire exit hardware for incorporation into O&M manuals.

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DOOR HARDWARE

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1.5 MAINTENANCE MATERIALS SUBMITTALS

- .1 Extra Stock Materials:
- .2 Supply maintenance materials in accordance with Section 017800 - Closeout Submittals.
 - .1 Tools:
 - .1 Supply 2 sets of wrenches for door closers locksets and fire exit hardware.

1.6 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.
 - .3 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
 - .4 Pre-installation Meetings: conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.

1.7 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 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 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.
 - .4 Replace defective or damaged materials with new.

2 PRODUCTS

2.1 HARDWARE ITEMS

- .1 Use one manufacturer's products only for similar items.
- .2 Specified manufacturer is the recommended supplier where specifically listed. Alternates may be proposed provided they meet the specification as listed below. Alternates must be approved in writing.

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2.2 DOOR HARDWARE

- .1 See Section 08 00 00-T1 – Schedule of Openings

2.3 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.

2.4 KEYING

- .1 Supply keys in duplicate for every lock in this Contract.
- .2 Stamp keying code numbers on keys and cylinders.
- .3 Provide locksets that will accept Everest 29 cylinders. Keyed to match the schools existing keyway system (end user controlled)
- .4 Coordinate with Project Manager for final keying requirements.

3 EXECUTION

3.1 INSTALLATION

- .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 Use only manufacturer's supplied fasteners.
 - .1 Use of "quick" type fasteners, unless specifically supplied by manufacturer, is unacceptable.
- .7 Remove construction cores when directed by Consultant.

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DOOR HARDWARE

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- .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 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
 - .2 Clean hardware with damp rag and approved non-abrasive cleaner, and polish hardware in accordance with manufacturer's instructions.
 - .3 Remove protective material from hardware items where present.
 - .4 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.4 DEMONSTRATION

- .1 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.
 - .2 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 GROUPINGS

- .1 See Section 08 00 00-T1 – Schedule of Openings

END OF SECTION

Section 08 80 00

GLAZING

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.1 GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 08 44 13 Glazed Aluminum Curtain Walls

1.2 GENERAL

- .1 Glazing System: is to meet or exceed requirements of SB-10 of the Ontario Building Code.
- .2 Contractor to submit in writing, certification and test results that the proposed systems, meet or exceed requirements of SB-10 of the Ontario Building Code.

1.3 REFERENCE STANDARDS

- .1 Aluminum Association (AA)
 - .1 ASHRAE/IES 90.1-1989
 - .2 ANSI/ASHRAE/USGBC/IES 189.1-2009
 - .3 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-12.1-M90, Tempered or Laminated Safety Glass.
 - .2 CAN/CGSB-12.4-M91, Heat Absorbing Glass.
 - .3 CAN/CGSB-12.8-97, Insulating Glass Units.
 - .4 CAN/CGSB-12.8-97 (Amendment), Insulating Glass Units.

1.4 DESIGN CRITERIA AND SUBMITTALS

- .1 Submit manufacturers instructions, printed product literature and data sheets for glass, sealants, and glazing accessories and include product characteristics, performance criteria, physical size, finish and limitations.
- .2 Submit Sample: Provide standard size samples for verification of selected finish for support system and each type, color, and texture of exposed finish, full thickness.
- .3 Glazing Size: 4 inch x 6 inch x 1/4 inch.

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 glazing for incorporation into manual.

1.6 WARRANTY

- .1 From the date of Certificate of Substantial Performance, the insulating glass units shall be warranted for a period of five (5) years against vision obstruction due to the formation

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of dust or film on the internal surfaces, caused by the failure of the hermetic seal other than through glass breakage.

- .2 Replace when so directed by the Architect, within the said periods, any and all portions of work which fail to perform according to the requirements of these specifications.

.2 PRODUCTS

2.1 MATERIALS

- .1 Design Criteria:
- .1 Ensure continuity of building enclosure vapour and air barrier using glass and glazing materials. Utilize inner light of multiple light sealed units for continuity of air / weather seal.
 - .2 Size glass to withstand wind loads, dead loads and positive and negative live loads acting normal to plane of glass to design pressure designated for the geographical location of the project to ASTM E330.
 - .3 Limit glass deflection to 1/200 with full recovery of glazing materials.

.2 GL: Insulating glass units

For exterior windows and doors

Typical sealed glazed unit (total thickness 25mm):

Outer pane: 6 mm thick heat tempered glass to CAN/CGSB-12.8, Clear Solarban60 low-E glass.

Air space: 13mm argon filled

Inner pane: 6 mm thick Laminated safety glass to CAN/CGSB-12.4, Clear glass.

Silicone-coated Spandrel Glass

For exterior windows

6mm thick heat tempered glass with water-based silicone coating, to ASTM C1048.

Accepted product: Opaci-Coat 300 by ICD Coatings

Consultant shall select from full line of standard colour options

2.2 GLAZING AND SEALING COMPOUND MATERIALS

- 1 Only compounds listed on the CGSB Qualified Sealing Compound Products List are acceptable for use on this project.
- .1 Glazing sealant: one part polysulphide to CAN/CGSB-19.13-M87 or one part silicone to CAN/CGSB-19.18-M87.
 - .2 Glazing tape: preshimmed polyisobutylene: Polyshim by Tremco. 10-15 durometer hardness, paper release, black.
 - .3 Glazing gasket: Tremco Vision Strip; colour selected by Architect.

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2.3 ACCESSORIES

- .1 Setting blocks: neoprene, 80-90 Shore A durometer hardness to ASTM D 2240, minimum 100 mm x width of glazing rabbet space minus 1.5 mm x height 6mm.
- .2 Spacer shims: neoprene, 80 Shore A durometer hardness to ASTM D 2240, 75 mm long x 2.4mm thick x 9mm high. Self adhesive on one face.
- .3 Glazing points and wire spring clips: corrosion resistant, manufacturer's standard.
- .4 Primer-sealers and cleaners: to glass manufacturer's standard.

.3 EXECUTION

3.1 WORKMANSHIP

- .1 Remove protective coatings and clean contact surfaces with solvent and wipe dry
- .2 Apply primer-sealer to contact surfaces.
- .3 Place setting blocks as per manufacturer's instructions.
- .4 Install glass, rest on setting blocks, ensure full contact and adhesion at perimeter.
- .5 Install removable stops, without displacing tape or sealant.
- .6 Provide edge clearance of 3 mm minimum.
- .7 Insert spacer shims to centre glass in space. Place shims at 600 mm oc and keep 6 mm below sight line.
- .8 Apply cap bead of the specified TREMCO sealant at exterior void.
- .9 Apply sealant to uniform and level line, flush with sightline and tooled or wiped with solvent to smooth appearance.
- .10 Do not cut or abrade tempered, heat treated or coated glass.

3.2 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for glazing installation in accordance with manufacturer's written 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 substrate in presence of Consultant.
 - .4 Inform Consultant of unacceptable conditions immediately upon discovery.
 - .5 Proceed with installation only after unacceptable conditions have been remedied.

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3.3

PREPARATION

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

3.4

CLEANING

- .1 Clean glass just prior to and immediately after installation. Remove glazers' dirt and stains.

END OF SECTION

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GYPSUM BOARD ASSEMBLIES

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1. GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 07 92 00 – Joint Sealants
- .2 Section 09 22 16 – Non-Structural Metal Framing
- 3 Section 09 91 23 – Interior Painting

1.2 REFERENCES

- .1 Aluminum Association (AA)
 - 1. AA DAF 45-03(R2009), Designation System for Aluminum Finishes.
- .2 ASTM International
 - 1. ASTM C 475-02(2007), Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
 - 2. ASTM C 514-04(2009e1), Standard Specification for Nails for the Application of Gypsum Board.
 - 3. ASTM C 557-03(2009)e1, Standard Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing.
 - 4. ASTM C 840-08, Standard Specification for Application and Finishing of Gypsum Board.
 - 5. ASTM C 1002-07, 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.
 - 6. ASTM C 1047-09, Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
 - 7. ASTM C 1280-99, Standard Specification for Application of Gypsum Sheathing.
 - 8. ASTM C 1396/C 1396M-09a, Standard Specification for Gypsum Wallboard.
- .3 Association of the Wall and Ceilings Industries International (AWCI)
 - 1. AWCI Levels of Gypsum Board Finish-97.
- .4 Canadian General Standards Board (CGSB)
 - 2. CAN/CGSB-51.34-M86(R1988), Vapour Barrier, Polyethylene Sheet for Use in Building Construction.
 - 3. CAN/CGSB-71.25-M88, Adhesive, for Bonding Drywall to Wood Framing and Metal Studs.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for gypsum board assemblies and include product characteristics, performance criteria, physical size, finish and limitations.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with general 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.

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- .3 Storage and Handling Requirements:
 - 1. Store gypsum board assemblies materials level off ground, indoors, 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 from weather, elements and damage from construction operations.
 - 4. Handle gypsum boards to prevent damage to edges, ends or surfaces.
 - 5. Protect prefinished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings which bond when exposed to sunlight or weather.
 - 6. Replace defective or damaged materials with new.
- .4 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding, packaging materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

1.5 AMBIENT CONDITIONS

- .1 Maintain temperature 10 degrees C minimum, 21 degrees 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, 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.

2. PRODUCTS

2.1 MATERIALS

- .1 **Standard Gypsum Board:**
To ASTM C1396, thickness and fire rating as indicated on drawings, 1200 mm wide x maximum practical length, ends square cut, edges bevelled.
Acceptable product: CSG Sheetrock Gypsum Panels, or approved equivalent.
- .2 **Glass mat gypsum substrate sheathing:**
To ASTM C 1177/C 1177M-13, 16 mm thick, 1200 mm wide x maximum practical length.
Type X to be installed on south facing facade
Acceptable product: CSC Securock or Gorgia-Pacific DensGlass
- .3 **Shaft Wall Assembly (Fire Wall)**
To ULC 452 thickness and fire rating as indicated on drawings.
12.7 mm (1/2") CGC Sheetrock Brand Firecode C Panels
25.4 mm (1") CGC Sheetrock Brand Glass-Mat Liner Panels
- .4 **Gypsum tile board on all walls finished with wall tile**
15.9 mm (5/8 in.) CGC Durock Glass-Mat Tile Backerboard
- .6 Metal furring runners, hangers, tie wires, inserts, anchors: in accordance with manufacturer's instructions.
- .6 Drywall furring channels: 0.5 mm core thickness galvanized steel channels for screw attachment of gypsum board.
- .7 Non-load bearing channel stud framing: to ASTM C645, roll formed and hot dipped

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- galvanized steel sheet.
- .8 Steel drill screws: to ASTM C1002.
- .9 Stud adhesive: to CAN/CGSB-71.25 & ASTM C557.
- .10 Laminating compound: as recommended by manufacturer, asbestos-free.
- .11 Casing beads, corner beads, control joints and edge trim: to ASTM C1047, galvanized metal, zinc-coated by electrolytic process, 0.5 mm base thickness, perforated flanges, one piece length per location. Acceptable product: 200 series, by CGC.
- .12 Cornice cap: 12.7 mm deep x partition width, of 1.6 mm base thickness galvanized sheet steel, prime painted extruded aluminum, minimum 2.5 mm thick, clear anodized to Aluminum Association designation AA. Include splice plates for joints.
- .13 Sealants: in accordance with Section 07 92 00 - Joint Sealants.
- .14 Joint compound: to ASTM C475, asbestos-free.

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 assembly installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate.
 - .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 of each corner and at maximum 600 mm 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, etc.
- .7 Install 19 x 64 mm 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.

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- .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, etc, 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 between the layers of gypsum board, spaced maximum 600 mm on centre and not more than 150 mm from ceiling/wall juncture. Secure to each support with 25 mm drywall screw.
- .14 Install 150 mm continuous strip of 12.7 mm 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 or double (as indicated) layer gypsum board to wood or metal furring or framing using screw fasteners for first layer, and screw fasteners for second layer. Maximum spacing of screws 300 mm on centre.
 - 1. Single-Layer Application :
 - a. Apply gypsum board on ceilings prior to application of walls to ASTM C840.
 - b. Apply gypsum board vertically or horizontally, providing sheet lengths that will minimize end joints.
 - 2. Apply base layers at right angles to supports unless otherwise indicated.
 - 3. 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 with base layer joints.
- .3 Apply 12 mm 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, or any fixed item in building, in partitions where perimeter sealed with acoustic sealant.
- .4 Apply board using stud adhesive on furring or framing and laminating adhesive on base layer of gypsum board.
- .5 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.
- .6 Install gypsum board with face side out.
- .7 Do not install damaged or damp boards.
- .11 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

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- accurately, free from rough edges. Secure using contact adhesive for full length at 150 mm 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 spicers.
 - .6 Construct control joints of preformed 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 where indicated, at approximate 10 m spacing on long corridor runs, at approximate 10 m spacing on ceilings. Coordinate joints locations with Architect.
 - .9 Install control joints straight and true.
 - .10 Install expansion joint straight and true.
 - .11 Install cornice cap where gypsum board partitions do not extend to ceiling.
 - .12 Fit cornice cap over partition, secure to partition track with two rows of sheet metal screws staggered at 300 mm on centre.
 - .13 Splice corners and intersections together and secure to each member with 3 screws.
 - .14 Install access doors to electrical and mechanical fixtures specified in respective sections.
 1. Rigidly secure frames to furring or framing systems.
 - .15 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.
 - .16 Gypsum Board Finish: finish gypsum board walls and ceilings to following levels in accordance with AWCI Levels of Gypsum Board Finish:
 1. Level of finish:
 - a. 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.
 - .17 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.
 - .18 Fill screw head depressions with joint and taping compounds to bring flush with adjacent surface of gypsum board so as to be invisible after surface finish is completed.
 - .19 Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.
 - .20 Completed installation to be smooth, level or plumb, free from waves and other defects and

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ready for surface finish.

- .21 Apply one coat of white primer sealer over surface to be textured. When dry apply textured finish in accordance with manufacturer's instructions.
- .22 Mix joint compound slightly thinner than for joint taping.
- .23 Apply thin coat to entire surface using trowel or drywall broad knife to fill surface texture differences, variations or tool marks.
- .24 Allow skim coat to dry completely.
- .25 Remove ridges by light sanding or wiping with damp cloth.

3.5 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - 1. Leave Work area clean at end of each day.
 - 2. Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.6 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by gypsum board assemblies installation.

END OF SECTION

Section 09 22 16

NON-STRUCTURAL METAL FRAMING

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1. GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 07 92 10 – Joint Sealants
- .2 Section 09 21 16 – Gypsum Board Assemblies
- .3 Section 09 91 23 – Interior Painting

1.2 REFERENCES

- .1 ASTM International
 - 1. ASTM C645-11a, Standard Specification for Non-structural Steel Framing Members.
 - 2. ASTM A653/A653M-15, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .3 CSA Group
 - 1. CAN/CSA-S136-12, North American specification for the design of cold-formed steel structural members.

1.3 DESIGN CRITERIA AND SUBMITTALS

- .1 The contractor shall retain a professional **Structural Engineer** licensed in the Province of Ontario to design and stamp shop drawings for interior gypsum on metal stud walls and all suspended gypsum ceilings.
- .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.

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 general 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 metal framing from nicks, scratches, and blemishes.
 - 3. Replace defective or damaged materials with new.

2. PRODUCTS

2.1 MATERIALS

- .1 Galvanized steel sheet, cold rolled steel: to ASTM A653, grades A to D, and CAN/CSA-S136, zinc coating.

2.2 NON-LOAD BEARING CHANNEL STUD

- .1 Non-load bearing channel stud framing: to ASTM C645, roll formed from 0.91 mm hot dipped galvanized steel sheet. Refer to wall assemblies for stud size.
- .2 Floor and ceiling tracks: to ASTM C645, in widths to suit stud sizes.
- .3 Furring Channels: Commercial steel sheet in accordance with ASTM A 653, Z180, hot dipped zinc-coated galvanized.
- .4 Acoustical sealant: in accordance with Section 07 92 00 - Joint Sealants.
- .5 Insulating strip: rubberized, moisture resistant 3 mm thick foam strip, 12 mm wide, with self sticking adhesive on one face, lengths as required.

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.
 - 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 Align partition tracks at floor and ceiling and secure at 400 mm on centre maximum.
- .2 Install damp proof course under stud shoe tracks of partitions on slabs on grade.
- .3 Place studs vertically at 400 mm on centre 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.
- .4 Erect metal studding to tolerance of 1:1000.
- .5 Attach studs to bottom & ceiling track using screws.
- .6 Co-ordinate simultaneous erection of studs with installation of service lines. When erecting

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NON-STRUCTURAL METAL FRAMING

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studs ensure web openings are aligned.

- .7 Co-ordinate erection of studs with installation of door/window frames and special supports or anchorage for work specified in other Sections.
- .8 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.
- .9 Install heavy gauge single jamb studs at openings.
- .10 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.
- .11 Frame openings and around built-in equipment, cabinets, access panels, on four sides. Extend framing into reveals. Check clearances with equipment suppliers.
- .12 Provide 40 mm 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.
- .13 Install steel studs or furring channel between studs for attaching electrical and other boxes.
- .14 Extend partitions to ceiling height except where noted otherwise on drawings.
- .15 Maintain clearance under beams and structural slabs to avoid transmission of structural loads to studs.
 - 1. Use 50 mm leg ceiling tracks. Use double track slip joint as indicated.
- .16 Install continuous insulating strips to isolate studs from uninsulated surfaces.
- .17 Install two continuous beads of acoustical sealant under studs and tracks around perimeter of sound control partitions.

3.3 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - 1. Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.4 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

Section 09 30 13

CERAMIC TILING

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1. GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 10 28 10 Toilet and Bath Accessories

1.2 REFERENCES

- .1 American National Standards Institute (ANSI)/Ceramic Tile Institute (CTI)
 - .1 ANSI A108.1-99, Specification for the Installation of Ceramic Tile (Includes ANSI A108.1A-C, 108.4-.13, A118.1-.10, ANSI A136.1).
 - .2 CTI A118.3-92, Specification for Chemical Resistant, Water Cleanable Tile Setting and Grouting Epoxy and Water Cleanable Tile Setting Epoxy Adhesive (included in ANSI A108.1).
 - .3 CTI A118.5-92, Specification for Chemical Resistant Furan Resin Mortars and Grouts for Tile Installation (included in ANSI A108.1).
 - .4 CTI A118.6-92, Specification for Ceramic Tile Grouts (included in ANSI A108.1).
- .2 American Society for Testing and Materials International (ASTM)
 - .1 ASTM C144-04, Specification for Aggregate for Masonry Mortar.
 - .2 ASTM C207-06, Specification for Hydrated Lime for Masonry Purposes.
 - .3 ASTM C847-06, Specification for Metal Lath.
 - .4 ASTM C979-05, Specification for Pigments for Integrally Coloured Concrete.
- .3 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-75.1-M88, Tile, Ceramic.
- .4 Canadian Standards Association (CSA International)
 - .1 CSA A123.3-05, Asphalt Saturated Organic Roofing Felt.
 - .2 CAN/CSA-A3000-03(R2006), Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
- .5 Terrazzo Tile and Marble Association of Canada (TTMAC)
 - .1 Tile Specification Guide 09 30 00 2006/2007, Tile Installation Manual.
 - .2 Tile Maintenance Guide 2000.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00- Submittal Procedures.
- .2 Provide product data in accordance with Section 01 33 00- Submittal Procedures.
 - .1 Include manufacturer's information on:
 - .1 Ceramic tile, marked to show each type, size, and shape required.
 - .2 Chemical resistant mortar and grout (Epoxy and Furan).
 - .3 Cementitious backer unit.
 - .4 Dry-set cement mortar and grout.
 - .5 Divider strip.
 - .6 Elastomeric membrane and bond coat.
 - .7 Reinforcing tape.

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- .8 Levelling compound.
- .9 Latex cement mortar and grout.
- .10 Commercial cement grout.
- .11 Organic adhesive.
- .12 Slip resistant tile.
- .13 Waterproofing isolation membrane.
- .14 Fasteners.
- .3 Provide samples in accordance with Section 01 33 00- Submittal Procedures.
 - .1 Floor tile: submit 300 x 300mm sample panels of each colour, texture, size, and pattern of tile.
 - .2 Trim shapes, bullnose cap and cove including bullnose cap and base pieces at internal and external corners of vertical surfaces, each type, colour, and size.

1.4 QUALITY ASSURANCE

- .1 Quality Assurance Submittals:
 - .1 Manufacturer's Instructions: manufacturer's installation instructions.
 - .2 Manufacturer's Field Reports: manufacturer's field reports specified.
 - .3 Manufacturer representative shall be present at all construction phases to ensure adequate quality control of the installation.

1.5 WARRANTY

- .1 Warranty shall be extended for 3 years.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Packing, shipping, handling and unloading:
 - .1 Deliver, store and handle materials in accordance with general requirements and with manufacturer's written instructions.

1.7 AMBIENT CONDITIONS

- .1 Maintain air temperature and structural base temperature at ceramic tile installation area above 12 degrees C for 48 hours before, during, and 48 hours after, installation.
- .2 Do not install tiles at temperatures less than 12 degrees C or above 38 degrees C.
- .3 Do not apply epoxy mortar and grouts at temperatures below 15 degrees C or above 25 degrees C.

1.8 MAINTENANCE

- .1 Extra Materials:
 - .1 Provide maintenance materials in accordance with Section 01 78 00- Closeout Submittals.
 - .2 Provide minimum 3% of each type and colour of tile required for project for maintenance use. Store where directed.
 - .3 Maintenance material same production run as installed material.

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CERAMIC TILING

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2. PRODUCTS

2.1 WALL TILE

- .1 Ceramic tile: to CAN/CGSB-75.1, commercial application, medium traffic.
- .2 Full height of wall unless otherwise noted.
- .3 Product:
 - .1 **WT1** - Olympia tile, Colour & Dimension
 - .1 format: 4"x16" rectangle
 - .2 series: COLOUR AND DIMENSION
 - .3 colour: To be selected from full line
 - .4 grout colour: Mapie, To best match tile colour`
- .4 Placement: Vertical

2.2 MORTAR / GROUT / PRIMER

- .1 **Floor Tile Mortar** – Product: Ultraflex LFT by Mapei, or approved equivalent.
- .2 **Sloped Floor Tile Mortar** - Planislope RS by Mapei, or approved equivalent.
- .3 **Wall tile Mortar** – Kerabond/Keralastic system by Mapei
- .4 **Tile Grout** – Product: Ultracolor Plus FA by Mapei, or approved equivalent.
- .5 **Grout Sealer** - UltraCare Penetrating Plus Stone, Tile & Grout Sealer by Mapei, or approved equivalent.

2.3 TRIM SHAPES

- .1 Conform to applicable requirements of adjoining floor and wall tile.
- .2 Use trim shapes sizes conforming to size of adjoining field wall tile, including existing spaces, unless specified otherwise.
- .3 External Corners: provide and install stainless steel trim by Schluter; Treadline profile.
- .4 Wall Base tile to be finished with stainless steel trim by Schluter, Jolly profile.

2.4 ACCESSORIES

- .1 Reinforcing mesh: 50 x 50 x 1.6 x 1.6 mm galvanized steel wire mesh, welded fabric design, in flat sheets.
- .2 Divider strips:
 - .1 Laminated strips, core 32 x 3 mm black neoprene, outsides (both sides) brass 32 x 1.29 mm complete with anchors, both sides spaced at 150 mm on centre.
- .3 Cleavage plane: No. 15 asphalt saturated felt to CSA A123.3
- .4 Metal lath: to ASTM C847 galvanized finish, 10 mm rib at 2.17 kg/m².
- .5 Reducer Strips: purpose made metal extrusion; stainless steel; maximum slope of 1:2.
- .6 Prefabricated Movement Joints: purpose made, having a Shore A Hardness not less than 60 and elasticity of plus or minus 40 percent when used in accordance to TTMAC Detail 301EJ.
- .7 Sealant: in accordance with Section 07 92 00- Joint Sealants.

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CERAMIC TILING

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- .8 Floor sealer and protective coating: to tile and grout manufacturers recommendations.

2.5 MIXES

- .1 Cement:
 - .1 Scratch coat: 1 part cement, 1/5 to 1/2 parts hydrated lime to suit job conditions, 4 parts sand, 1 part water, and latex additive where required. Adjust water volume depending on water content of sand.
 - .2 Slurry bond coat: cement and water mixed to creamy paste. Latex additive may be included.
 - .3 Mortar bed for floors: 1 part cement, 4 parts sand, 1 part water. Adjust water volume depending on water content of sand. Latex additive may be included.
 - .4 Mortar bed for walls and ceilings: 1 part cement, 1/5 to 1/2 parts hydrated lime to suit job conditions, 4 parts sand and 1 part water. Adjust water volume depending on water content of sand. Latex additive may be included.
 - .5 Levelling coat: 1 part cement, 4 parts sand, minimum 1/10 part latex additive, 1 part water including latex additive.
 - .6 Bond or setting coat: 1 part cement, 1/3 part hydrated lime, 1 part water.
 - .7 Measure mortar ingredients by volume.
- .2 Dry set mortar: mix to manufacturer's instructions.
- .3 Mix bond and levelling coats, and grout to manufacturer's instructions.
- .4 Adjust water volumes to suit water content of sand.

2.6 PATCHING AND LEVELLING COMPOUND

- .1 Cement base, acrylic polymer compound, manufactured specifically for resurfacing and leveling concrete floors. Products containing gypsum are not acceptable.
- .2 Have not less than the following physical properties:
 - .1 Compressive strength - 25 MPa.
 - .2 Tensile strength - 7 MPa.
 - .3 Flexural strength - 7 MPa.
 - .4 Density - 1.9.
- .3 Capable of being applied in layers up to 50 mm thick, being brought to feather edge, and being trowelled to smooth finish.
- .4 Ready for use in 48 hours after application.

2.7 CLEANING COMPOUNDS

- .1 Specifically designed for cleaning masonry and concrete and which will not prevent bond of subsequent tile setting materials including patching and leveling compounds and elastomeric waterproofing membrane and coat.
- .2 Materials containing acid or caustic material are not acceptable.

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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 WORKMANSHIP

- .1 Do tile work in accordance with TTMAC Tile Installation Manual 2006/2007, "Ceramic Tile", except where specified otherwise.
- .2 Apply tile to clean and sound surfaces.
- .3 Fit tile around corners, fitments, fixtures, drains and other built-in objects. Maintain uniform joint appearance. Cut edges smooth and even. Do not split tiles.
- .4 Maximum surface tolerance 1:800.
- .5 Make joints between tile uniform and approximately 2 mm wide, plumb, straight, true, even and flush with adjacent tile. Ensure sheet layout not visible after installation. Align patterns.
- .6 Lay out tiles so perimeter tiles are minimum 1/2 size.
- .7 Sound tiles after setting and replace hollow-sounding units to obtain full bond.
- .8 Make internal angles square, external angles rounded.
- .9 Use round edged tiles at termination of wall tile panels, except where panel abuts projecting surface or differing plane.
- .10 Install divider strips at junction of tile flooring and dissimilar materials or directions.
- .11 Allow minimum 24 hours after installation of tiles, before grouting.
- .12 Clean installed tile surfaces after installation and grouting cured.
- .13 Make control joints where indicated. Make joint width same as tile joints. Fill control joints with sealant in accordance with Section 07 92 00- Joint Sealants. Keep building expansion joints free of mortar and grout.

3.3 FLOOR SEALER AND PROTECTIVE COATING

- .1 Apply in accordance with manufacturer's instructions.

3.4 FIELD QUALITY CONTROL

- .1 Manufacturer's Field Services:
 - .1 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

3.5 CLEANING

- .1 Progress Cleaning: Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.

END OF SECTION

Section 09 51 13

ACOUSTICAL PANEL CEILINGS

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1. GENERAL

1.1 RELATED REQUIREMENTS

- .1 Louvres, Intakes and Vents: Air inlets and outlets to be coordinated with ceiling work.

1.2 REFERENCE STANDARDS

- .1 ASTM International
 - .1 ASTM C635/C635M-07, Standard Specifications for the Manufacture, Performance and Testing of Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings.
 - .2 ASTM C636/C636M-08, Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.
 - .3 ASTM E84 – 16, Standard Test Method for Surface Burning Characteristics of Building Materials.
 - .4 ASTM E1264 – 14, Standard Classification for Acoustical Ceiling Products.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-92.1-M89, Sound Absorptive Prefabricated Acoustical Units.
- .3 Underwriter's Laboratories of Canada (ULC)
 - .1 CAN/ULC-S102-2007, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00- Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for ceiling panels and ceiling suspension system 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 Ontario for the seismic design and confirmation that the existing structure shall withstand the loads of the new ceiling system.**
 - .2 Submit reflected ceiling plans for special grid patterns as indicated.
 - .3 Indicate lay-out, insert and hanger spacing and fastening details, splicing method for main and cross runners, and lateral bracing and accessories.
- .4 Samples:
 - .1 Submit for review and acceptance of each unit.
 - .2 Samples will be returned for inclusion into work.
 - .3 Submit duplicate samples of each type acoustical units.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with general 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.

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ACOUSTICAL PANEL CEILINGS

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.3 Storage and Handling Requirements:

- .1 Store materials indoors off ground and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
- .2 Store materials inside, level, under cover. Protect from weather, damage from construction operations and other causes, in accordance with manufacturer's printed instructions.
- .3 Handle materials to prevent damage to edges or surfaces. Protect metal accessories and trim from being bent or damaged.
- .4 Store and protect acoustic ceiling materials from nicks, scratches, and blemishes.
- .5 Replace defective or damaged materials with new.

1.5 MAINTENANCE MATERIALS

- .1 Deliver acoustical units for maintenance use amounting to 2 cartons / cases of 12 units.
- .2 Maintenance materials to be same production run and installed materials.

2. PRODUCTS

2.1 COMPONENTS

- .1 Acoustic units for suspended ceiling system: to CAN/CGSB-92.1.
CGC Radar Education Acoustic Panels (22541 Firecode), white
- .2 Acoustical Suspension:
 - .1 CGC Donn DX/DXL 15/16 exposed tee system, Flat white standard
- .3 Performance/Design Criteria:
 - .1 Maximum deflection: 1/360th of span to ASTM C635 deflection test.

2.2 ACCESSORIES

- .1 Touch-up paint: in accordance with manufacturer's recommendations for surface conditions:
 - .1 Paint: VOC limit 250g/L.

3. EXECUTION

3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for product installation in accordance with manufacturer's written instructions prior to acoustical ceiling installation.
 - .1 Visually inspect substrate in presence of Architect.
 - .2 Inform Architect 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 Architect.

3.2 INSTALLATION

- .1 Installation: in accordance with ASTM C636 except where specified otherwise.
- .2 Suspension System:
 - .1 Erect ceiling suspension system after work above ceiling has been inspected by Architect.
 - .2 Secure hangers to overhead structure using attachment methods acceptable to Architect
 - .3 Install hangers spaced at maximum 1200mm centres and within 150mm from ends of main tees.
 - .4 Lay out system according to reflected ceiling plans.
 - .5 Install wall moulding to provide correct ceiling height.
 - .6 Completed suspension system to support super-imposed loads, such as diffusers, grilles, lighting fixtures, etc.
 - .7 Support at light fixtures and diffusers with additional ceiling suspension hangers within 150mm of each corner and at maximum 600mm around perimeter of fixture.
 - .8 Interlock cross member to main runner to provide rigid assembly.
 - .9 Ensure finished ceiling system is square with adjoining walls and level within 1:1000.
- .3 Acoustic Panels:
 - .1 Install acoustical panels and tiles in ceiling suspension system.
 - .2 Co-ordinate ceiling work with work of other sections such as interior lighting, fire protection communication, and intrusion and detection systems.

3.3 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11- Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11- Cleaning.

3.4 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by acoustical ceiling installation.

END OF SECTION

Section 09 65 19

RESILIENT TILE FLOORING

2026

1. GENERAL

1.1 RELATED REQUIREMENTS

1.2 REFERENCE STANDARDS

- .1 ASTM International
 - .1 ASTM F1066-04(2010) e1, Standard Specification for Vinyl Composition Floor Tile.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00- Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for resilient tile flooring and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Samples:
 - .1 Submit duplicate tile in size specified, and base 300 mm long.

1.4 MAINTENANCE MATERIAL SUBMITTALS

- .1 Extra Materials:
 - .1 Provide maintenance materials of resilient tile flooring, base and adhesive in accordance with general conditions.
 - .2 Extra materials from same production run as installed materials.
 - .3 Identify each container of floor tile and each container of adhesive.
 - .4 Deliver to Client, upon completion of the work of this section.
 - .5 Store where directed by Client.

1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with general 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 indoors off ground 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 Replace defective or damaged materials with new.

1.6 SITE CONDITIONS

- .1 Ambient Conditions:
 - .1 Maintain air temperature and structural base temperature at flooring installation area above 20 degrees for 48 hours before, during and 48 hours after installation.

Section 09 65 19

RESILIENT TILE FLOORING

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2. PRODUCTS

2.1 MATERIALS

- .1 Vinyl composition tile: to ASTM F1066
 - .1 Product:
 - .2 **VCT** - Standard Excelon Imperial buy Armstrong,
 - .3 Colour: allow up to 6 accent colours plus field colour, **to be selected by Consultant.**
 - .4 Finish: Factory prefinished.
 - .5 Floor layout design to be determined. Level of complexity to match existing school VCT floor layout.
- .2 Rubber base:
 - .1 **RB:** Tarkett;
 - .1 Type: rubber.
 - .2 Style: traditional
 - .3 Height: 101.6mm.
 - .4 Colour: **To be selected by Consultant**
- .3 Primers and adhesives: waterproof, recommended by flooring manufacturer for specific material on applicable substrate, above, at or below grade.
 - .1 Flooring adhesives:
 - .1 Adhesive: maximum VOC limit 60g/L.
- .4 Sub-floor filler and leveller: as recommended by flooring manufacturer for use with their product.
- .5 Sealer: type recommended by flooring manufacturer.
 - .1 Sealant:
 - .1 Sealant: maximum VOC limit 50g/L.
- .6 Wax: type recommended by flooring manufacturer.

3. EXECUTION

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for resilient tile flooring installation in accordance with manufacturer's written instructions.
 - .1 Visually inspect substrate in presence of Architect.
 - .2 Inform Architect 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 Architect.

3.2 INSPECTION

- .1 Ensure concrete floors are dry, by using test methods recommended by tile manufacturer.

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RESILIENT TILE FLOORING

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3.3 SUB-FLOOR TREATMENT

- .1 Remove existing resilient flooring.
- .2 Remove or treat old adhesives to prevent residual, old flooring adhesives from bleeding through to new flooring and/or interfering with the bonding of new adhesives.
- .3 See 09 60 00 Self-Leveling Concrete

3.4 TILE APPLICATION

- .1 Provide high ventilation rate, with maximum outside air, during installation, and for 48 to 72 hours after installation. If possible, vent directly to outside. Do not let contaminated air recirculate through district or whole building air distribution system. Maintain extra ventilation for at least one month following building occupation.
- .2 Apply adhesive uniformly using recommended trowel in accordance with flooring manufacturer's instructions. Do not spread more adhesive than can be covered by flooring before initial set takes place.
- .3 Lay flooring with joints parallel to building lines to produce symmetrical tile pattern. Border tiles minimum half tile width.
- .4 Install flooring to square grid pattern with joints aligned.
- .5 As installation progresses, and after installation, roll flooring in 2 directions with 45kg minimum roller to ensure full adhesion.
- .6 Cut tile and fit neatly around fixed objects.
- .7 Install feature strips and floor markings where indicated. Fit joints tightly.
- .8 Install flooring in pan type floor access covers. Maintain floor pattern.
- .9 Terminate flooring at centerline of door in openings where adjacent floor finish or colour is dissimilar.
- .10 Install metal edge strips at unprotected or exposed edges where flooring terminates.

3.5 BASE APPLICATION

- .1 Lay out base to keep number of joints at minimum. Base joints at maximum length available or at internal or premoulded corners.
- .2 Clean substrate and prime with one coat of adhesive.
- .3 Apply adhesive to back of base.
- .4 Set base against wall and floor surfaces tightly by using 3 kg hand roller.
- .5 Install straight and level to variation of 1:1000.
- .6 Scribe and fit to door frames and other obstructions.
- .7 Cope internal corners.

3.6 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11- Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11- Cleaning.
 - .1 Clean flooring surfaces to flooring manufacturer's printed instructions.
- .3 Remove excess adhesive from floor, base and wall surfaces without damage.

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RESILIENT TILE FLOORING

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- .4 Clean, seal and wax floor and base surface to flooring manufacturer's instructions. In carpeted areas clean, seal and wax base surface before carpet installation.

3.7 PROTECTION

- .1 Protect new floors from time of final set of adhesive until final inspection.
- .2 Prohibit traffic on floor for 48 hours after installation.
- .3 Use only water-based coating for linoleum.

END OF SECTION

Section 09 91 00

PAINTING

2026

1 GENERAL

1.01 RELATED REQUIREMENTS

1.02 REFERENCE STANDARDS

- .1 Green Seal Environmental Standards (GS)
 - .1 GS-11-2008, 2nd Edition, Paints and Coatings.
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Safety Data Sheets (SDS).
- .3 The Master Painters Institute (MPI)
 - .1 Architectural Painting Specification Manual - current edition.
 - .2 Maintenance Repainting Manual - current edition.
- .4 National Research Council Canada (NRC)
 - .1 National Building Code of Canada 2015 (NBC).

1.03 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for paint and coating products and include product characteristics, performance criteria, physical size, finish and limitations.
 - .2 Submit 2 copies of WHMIS SDS
- .3 Samples:
 - .1 Submit for review and acceptance of each unit.
 - .2 Submit duplicate 200 x 305 mm sample panels of each paint, special finish with specified paint or coating in colours, gloss/sheen and textures required to MPI Painting Specification Manual standards.
- .4 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.04 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Provide and maintain dry, temperature controlled, secure storage.
 - .2 Store painting materials and supplies away from heat generating devices.
 - .3 Store materials and equipment in well ventilated area within temperature as recommended by manufacturer.

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PAINTING

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1.05 SITE CONDITIONS

- .1 Temperature, Humidity and Substrate Moisture Content Levels:
 - .1 Apply paint finishes when ambient air and substrate temperatures at location of installation can be satisfactorily maintained during application and drying process, within MPI and paint manufacturer's prescribed limits.
 - .2 Test concrete, masonry and plaster surfaces for alkalinity as required.
 - .3 Apply paint to adequately prepared surfaces, when moisture content is below paint manufacturer's prescribed limits.
- .2 Additional application requirements:
 - .1 Apply paint finish in areas where dust is no longer being generated by related construction operations or when wind or ventilation conditions are such that airborne particles will not affect quality of finished surface.

2 PRODUCTS

2.01 MATERIALS

- .1 Supply paint materials for paint systems from single manufacturer.
- .2 Conform to latest MPI requirements for painting work including preparation and priming.
- .3 Materials in accordance with MPI - Architectural Painting Specification Manual and MPI - Maintenance Repainting Manual "Approved Product" listing.
 - .1 Use MPI listed materials having E2 rating where indoor air quality requirements exist.
 - .2 Primer: VOC limit 100 g/L maximum to GS-11
 - .3 Paint: VOC limit 100 g/L maximum to GS-11
- .4 Colours:
 - .1 Allow for 8 accent colours and one primary base colour.
- .5 Mixing and tinting:
 - .1 Perform colour tinting operations prior to delivery of paint to site, in accordance with manufacturer's written recommendations.
 - .2 Use and add thinner in accordance with paint manufacturer's recommendations.
 - .1 Do not use kerosene or similar organic solvents to thin water-based paints.
 - .3 Thin paint for spraying in accordance with paint manufacturer's written recommendations.
 - .4 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.
- .6 Gloss/sheen ratings:
 - .1 Paint gloss is defined as sheen rating of applied paint, in accordance with following values:

Gloss Level-Category	Gloss @ 60 degrees	Sheen @ 85 degrees
Gloss Level 5 - Semi-Gloss	35 to 70	
 - .2 Gloss level ratings of painted surfaces to match existing.
- .7 Exterior Painting
 - .1 Structural Steel and Metal Fabrications: columns, beams, joists and miscellaneous metal.
 - .1 REX 5.1D - Alkyd (semi gloss).

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PAINTING

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- .8 Interior Painting
 - .1 Acceptable Material: Benjamin Moore Ulta Spec **500**
 - .2 Structural Steel and Metal Fabrications: columns, beams, joists and miscellaneous metal.
 - .1 RIN 5.1E - Alkyd (semi gloss)
 - .3 Galvanized Metal: high contact/high traffic areas (doors, frames, railings and handrails, etc.).
 - .1 RIN 5.3C - Alkyd (semi gloss)
 - .4 Masonry and Gypsum Board:
 - .1 RIN 9.2A - Latex (semi gloss)

3 EXECUTION

3.01 GENERAL

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and data sheets.
- .2 Perform preparation and operations for interior painting in accordance with MPI - Architectural Painting Specifications Manual and MPI - Maintenance Repainting Manual except where specified otherwise.

3.02 EXAMINATION

- .1 Investigate existing substrates for problems related to proper and complete preparation of surfaces to be painted. Report to Consultant damages, defects, unsatisfactory or unfavourable conditions before proceeding with work.
- .2 Conduct moisture testing of surfaces to be painted using properly calibrated electronic moisture meter, except test concrete floors for moisture using simple "cover patch test". Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.

3.03 PREPARATION

- .1 Protection of in-place conditions:
 - .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.
 - .3 Protect factory finished products and equipment.
- .2 Surface Preparation:
 - .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 Place "WET PAINT" signs in occupied areas as painting operations progress.
 - .4 Clean and prepare surfaces in accordance with MPI - Architectural Painting Specification Manual and MPI - Maintenance Repainting Manual specific requirements and coating manufacturer's recommendations.
 - .5 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

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PAINTING

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- after cleaning and before deterioration occurs.
- .6 Where possible, prime non-exposed surfaces of new wood surfaces before installation. Use same primers as specified for exposed surfaces.
 - .1 Apply vinyl sealer to MPI #36 over knots, pitch, sap and resinous areas.
 - .2 Apply wood filler to nail holes and cracks.
 - .3 Tint filler to match stains for stained woodwork.
- .7 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.
- .8 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.
- .9 Touch up of shop primers with primer as specified.

3.04 APPLICATION

- .1 Use method of application
 - .1 Conform to manufacturer's application recommendations.
- .2 Apply coats of paint in continuous film of uniform thickness.
 - .1 Repaint thin spots or bare areas before next coat of paint is applied.
 - .2 One (1) coat of primer-sealer to CAN/CGSB-1-119-2000
 - .3 Two (2) coats Minimum of semi gloss,
- .3 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
- .4 Sand and dust between coats to remove visible defects.
- .5 Finish surfaces both above and below sight lines as specified for surrounding surfaces, including such surfaces as tops of interior cupboards and cabinets and projecting ledges.
- .6 Finish inside of cupboards and cabinets as specified for outside surfaces.
- .7 Finish closets and alcoves as specified for adjoining rooms.
- .8 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.
- .9 Mechanical/Electrical Equipment:
 - .1 Paint conduits, piping, hangers, ductwork and other mechanical and electrical equipment exposed in finished areas, to match adjacent surfaces, except as indicated.
 - .2 Do not paint over nameplates.
 - .3 Keep sprinkler heads free of paint.
 - .4 Paint fire protection piping red.
 - .5 Paint disconnect switches for fire alarm system and exit light systems in red enamel.
 - .6 Paint natural gas piping yellow.
 - .7 Paint both sides and edges of backboards for telephone and electrical equipment before installation.
 - .1 Leave equipment in original finish except for touch-up as required, and paint conduits, mounting accessories and other unfinished items.

3.05 CLEANING

- .1 Progress Cleaning:
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.

END OF SECTION

.1 GENERAL

1.1 SUMMARY OF WORK

- .1 Work Included: The work of this Section includes the provision of all labour, materials, equipment and services required to fabricate and install Whiteboards as specified herein and as required for a complete project.

1.2 REFERENCES

- .1 Aluminum Association (AA):
 - .1 AA-DAF-45-2009, Designation System for Aluminum Finishes, Ninth Edition.
- .2 American Society for Testing and Materials (ASTM):
 - .1 ASTM B221-13, Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles and Tubes.
- .3 Canadian General Standards Board (CGSB):
 - .1 CAN/CGSB-11.3-M87, Hardboard.
- .4 Underwriters' Laboratories of Canada (ULC):
 - .1 CAN/ULC-S102-10, Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

1.3 REGULATORY REQUIREMENTS

- .1 The whiteboards and tackboards shall comply with OBC 2012 surface burning characteristics requirements when tested in accordance with CAN/ULC-S102.

1.4 QUALIFICATIONS

- .1 The work of this Section shall be fabricated by a manufacturer with minimum 5 years experience in the actual production of the specified products.

1.5 SUBMITTALS

- .1 Submit manufacturer's instructions, printed product literature and data sheets.
- .2 Shop Drawings: Clearly indicate location, type, dimensional layouts, panel arrangement, backing, hardware, anchor or mounting details, frame, trim and accessories.

1.6 PROTECTION

- .1 Protect whiteboards and tackboards from damage after installation, provide polyethylene cover during painting.

1.7 WARRENTY

- .1 For the work of this Section, the 12-months warranty prescribed in the General Conditions of the Contract is extended to 10 years.

Section 10 11 00

WHITEBORDS

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.2 PRODUCTS

2.1 GENERAL

- .1 This specification is based on whiteboards and tackboards as manufactured by Architectural School Products Ltd.
- .2 Equivalent products manufactured by Delta Products Ltd or Global School Products Inc. are acceptable alternatives.
- .3 Whiteboard types and sizes are indicated on the drawings.

2.2 BOARDS

- .1 Whiteboards: Refer to drawings for locations and sizes. Laminated construction consisting of:
 - .1 Front: Minimum 22 ga rolled steel sheet treated with a rust inhibitor
 - .2 Writing Surface: Porcelain enamel writing surface. Surface finish suitable for erasable markers. Colour white.
 - .3 11 mm fibreboard core.
 - .4 Back: 28 ga rolled steel sheet treated with a rust inhibitor

2.3 TRIM AND FRAMING

- .1 Material: Extruded aluminum to ASTM B221, 6063T5 alloy and temper. Finish: electrolytically deposited clear anodic finish, designation AA-M12-C22-A31, Architectural Class II, in accordance with AA DAF-45. Finish to free from extruding draw marks and surface scratches.
- .2 Standard Trim: Series 2000:
 - .1 No. 203 exposed face trim. Top, bottom and sides of whiteboards and tackboards, except where otherwise specified.
 - .2 No. 201 marker tray with closed end castings. Bottom of whiteboards.
 - .3 Provide at top of whiteboards a No. 206 display rail with cork insert and six combination roller map hooks per 2400 mm length.

2.4 ATTACHMENT HARDWARE

- .1 Anchor clips, brackets and fasteners as supplied by the manufacturer for concealed mounting.

2.5 FABRICATION

- .1 Factory-laminate whiteboards and tackboards to provide a complete system with facings, back-up, and perimeter framing. .
- .2 Make finished panels flat and rigid.

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- .3 Install trim on panels in the factory. Make mitres and other joints to a hair-line fit, free of rough edges, with concealed brackets to reinforce and hold joints tight and flush. Exposed fasteners are not permitted.
- .4 Overlap trim minimum 6 mm onto panels.

.3 EXECUTION

3.1 INSTALLATION

- .1 Install whiteboards and tackboards in accordance with the manufacturer's instructions, plumb and level. Use mechanical attachments only. Do not use adhesives. Provide rigid, secure surfaces.
- .2 Mechanical attachment:
 - .1 To hollow masonry use toggle bolts or equivalent.
 - .2 To wood or sheet metal use screws. Secure into framing members in stud walls or provide wood blocking between studs at attachment locations

3.2 CLEANING

- .1 Clean surfaces after installation using manufacturer's recommended cleaning procedures.

END OF SECTION

Section 10 21 13

METAL TOILET COMPARTMENTS

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1. GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 07 92 00 – Joint Sealants
- .2 Section 09 21 16 – Gypsum Board Assemblies
- .3 Section 09 30 13 – Ceramic Tiling
- .4 Section 10 28 10 – Toilet and Bath Accessories

1.2 REFERENCE STANDARDS

- .1 ASTM International
 - .1 ASTM A653/A653M-11, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-1.81-M90, Air Drying and Baking Alkyd Primer for Vehicles and Equipment.
- .3 CSA International
 - .1 CSA B651-12, Accessible Design for the Built Environment.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with general conditions.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for metal toilet compartments and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Installation Drawings:
 - .1 Submit drawings stamped and signed.
 - .2 Indicate fabrication details, plans, elevations, hardware, and installation details.
- .4 Samples:
 - .1 Submit duplicate 300 x 300 mm samples of panel showing finished edge and corner construction and core construction.
 - .2 Submit duplicate representative samples of hardware items, including brackets, fastenings and trim.

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.

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METAL TOILET COMPARTMENTS

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1.5 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section with manufacturer's written instructions and general conditions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials in dry location, off ground, indoors and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect metal toilet compartments from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.

2. PRODUCTS

2.1 MATERIALS

- .1 Metal toilet partitions.
- .2 Toilet Compartments: Floor anchored.
 - .1 Compartment Depth and Width: As scheduled and indicated on Drawings.
 - .2 Height Above Floor: 12 inches (305 mm).
 - .3 Door/Panel Height: 58 inches (1473 mm).
 - .4 Pilaster Height: 70 inches (1778 mm).
- .3 Two sheets of panel flatness zinc-coated galvalume steel to ASTM A653.
- .4 Doors, Panels, Screens, and Pilasters: Tension leveled, cold-rolled galvanized steel face sheet, bonded under pressure to honeycomb core with non-toxic adhesive.
 - .1 Doors, Screens, and Panels: 1 inch (25 mm) thick; 22 gage (0.760 mm) steel.
 - .2 Edge Moldings: Continuous roll-formed interlocking, 22 gage (0.760 mm) steel crown molding, brazed and ground smooth at corners.
- .5 Finish: Epoxy/polyester powder coat electrostatically applied to phosphate treated steel, baked to cure. Color to be selected from full line.
- .6 Mounting Brackets: Chromium plated Zamac stirrup brackets with theft resistant screws.
- .7 Pilaster Shoes: Type 304 Stainless Steel, No. 4 satin finish. Minimum 3 inches (76 mm) high secured to floor with internal clips.
- .8 Pilaster Anchors: Floor Anchored.
 - .1 0.116 inches slotted stirrup bracket welded in base of pilaster, with two 3/8-inch diameter cadmium-plated studs anchoring bracket to floor.
 - .2 Concealed by pilaster shoe after installation.
- .9 Acceptable products from Hadrian, Bobrick Washroom Equipment or ASI Global Partitions or approved equivalent.

2.2 COMPONENTS

- .1 Door Hardware: Attached with theft resistant barrel nuts and shoulder screws.

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METAL TOILET COMPARTMENTS

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- .1 Finish: Chromium plated Zamac or Type 304.
- .2 Strike and Keeper: With concealed latch assembly with face mortised flush with edge strip of door. Provisions for external emergency access, chrome plated non-ferrous. Standard concealed handle.
- .3 Bumper only: rubber door bumper, manufacturer's standard surface mounted. No tamper resistant screws required.
- .4 Door Pull: barrier-free type suited for out swinging doors, stainless steel, on the inside and outside of doors.
- .5 Fastening Hardware: Theft resistant heads, zinc-plated 12 x 1-3/4" and 12 x 5/8" TR-27 6-lobe security screws.
- .2 Hinges:
 - .1 Heavy duty, gravity type, mounted on upper and lower pilaster hinge brackets.
 - .2 Fully concealed within the thickness of the door and adjustable to permit the door to come to rest at any position when not latched.
 - .3 Threaded upper hinge pin shall have a metal core and self lubricating nylon sleeve to ensure smooth, quiet operation.
 - .4 Material/finish: chrome plated non-ferrous casting.
 - .5 Swing: inward.
 - .6 Return movement: gravity.
 - .7 Emergency access feature.
- .3 Wall and connecting brackets: chrome plated non-ferrous extrusion or casting.

2.3 FABRICATION

- .1 Doors, panels and screens: 25mm thick, two steel sheets faces pressure bonded to honeycomb core. Honeycomb to have a maximum 25mm cell size.
- .2 Pilasters: 25 mm thick, constructed same as door.
- .3 Include formed and closed edges for doors, panels and pilasters.
 - .1 Miter and weld corners and grind smooth.
- .4 Include internal reinforcement at areas of attached hardware and fittings.
 - .1 Temporarily mark location of reinforcement for tissue holders and grab bars.

2.4 FINISHES

- .1 Clean, degrease and neutralize steel components with phosphate or chromate treatment.
- .2 Spray apply primer to CAN/CGSB-1.81.
- .3 Spray apply finish enamel and bake to smooth, hard finish 0.025 mm thick, high performance powder coating, uniform smooth protective finish.
- .4 Finish: doors and pilaster/panels colour as selected from manufacturer's full range of colours.

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METAL TOILET COMPARTMENTS

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3. EXECUTION

3.1 EXAMINATION

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for metal toilet compartment 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 PREPARATION

- .1 Ensure supplementary anchorage, if required, is in place.

3.4 ERECTION

- .1 Do work in accordance with CSA B651.
- .2 Partition erection.
 - .1 Install partitions secure, plumb and square.
 - .2 Leave 12 mm space between wall and panel or end pilaster.
 - .3 Anchor mounting brackets to masonry/concrete surfaces using screws and shields: blocking/backing must be provided to hollow walls using bolts and toggle type anchors.
 - .4 Attach panel and pilaster to brackets with through type sleeve bolt and nut.
 - .5 Allow for adjustment of floor-braced pilasters variations with screw jack through steel saddles made integral with pilaster.
 - .1 Conceal floor fixings with stainless steel shoes.
 - .6 Include templates and drilling dimensions for locating threaded studs through finished ceilings.
 - .7 Equip doors with hinges, latch set, and each stall with coat hook mounted on door.
 - .1 Adjust and align hardware for easy, proper function. Set door open position full open.
 - .2 Install door bumper on door.
 - .8 Equip out swinging doors with door pulls on outside and inside of door.
 - .9 Install hardware.
 - .10 Installation Tolerances:
 - .1 Maximum variations from plumb or level: 1/8 inch (3 mm).
 - .2 Clearance between wall surface and panels or pilasters: 1-1/2 inch (38 mm) maximum.

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METAL TOILET COMPARTMENTS

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- .3 Floor supported partition erection.
 - .1 Secure pilasters to floor with pilaster supports anchored with minimum 76 mm penetration in structural floor.
 - .2 Level, plumb and tighten installation with levelling device.
 - .3 Secure pilaster shoes in position.
 - .4 Set tops of doors level with tops of pilasters when doors are in closed position.

3.5 ADJUSTING

- .1 Adjust doors and locks for optimum, smooth operating condition.
- .2 Lubricate hardware and other moving parts.

3.6 CLEANING

- .1 Perform cleaning after installation to remove construction and accumulated environmental dirt.
- .2 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.
- .3 Progress Cleaning: clean in accordance with Section 01 74 11- Cleaning.
 - .1 Leave Work area clean at end of each day.
- .4 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11- Cleaning.
 - .1 Clean surfaces after installation using manufacturer's recommended cleaning procedures.
 - .2 Clean aluminum with damp rag and approved non-abrasive cleaner.
 - .3 Clean and polish hardware and stainless components.

3.7 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by metal toilet compartment installation.

END OF SECTION

Section 10 28 10

TOILET AND BATH ACCESSORIES

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1. GENERAL

1.1 RELATED REQUIREMENTS

- .1 Section 07 92 00 – Joint Sealants
- .2 Section 09 21 16 – Gypsum Board Assemblies
- .3 Section 09 30 13 – Ceramic Tiling
- .4 Section 10 21 13 – Metal Toilet Compartments

1.2 REFERENCE STANDARDS

- .1 ASTM International
 - .1 ASTM A167-99(2009), Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
 - .2 ASTM B456-0], Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium.
 - .3 ASTM A653/A653M-0, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-1.81-M90, Air Drying and Baking Alkyd Primer for Vehicles and Equipment.
 - .2 CAN/CGSB-1.88-92, Gloss Alkyd Enamel, Air Drying and Baking.
 - .3 CGSB 31-GP-107MA-9], Non-inhibited Phosphoric Acid Base Metal Conditioner and Rust Remover.
- .3 CSA International
 - .1 CAN/CSA-G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00- Submittal Procedures.
- .2 Product Data:
 - .1 Provide manufacturer's printed product literature and data sheets and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Shop Drawings:
 - .1 Indicate size and description of components, base material, surface finish inside and out, hardware and locks, attachment devices, description of rough-in-frame, building-in details of anchors for grab bars.
- .4 Samples:
 - .1 Submit samples for partition finish.

1.4 CLOSEOUT SUBMITTALS

- .1 Provide maintenance data for toilet and bath accessories for incorporation into manual specified in general conditions.

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TOILET AND BATH ACCESSORIES

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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.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with general conditions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect toilet and bathroom accessories from nicks, scratches, and blemishes.
 - .3 Replace defective or damaged materials with new.
- .4 Packaging Waste Management: remove for reuse and return by manufacturer of packaging materials, pallets, crates, in accordance with Section 01 74 21- Construction/Demolition Waste Management and Disposal.

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, finish 4
- .3 Sustainability Characteristics:
 - .1 Laminate Adhesives.
 - .1 Urea Formaldehyde Free.
- .4 Stainless steel tubing: Type 304, commercial grade 1.2mm wall thickness.
- .5 Fasteners: concealed screws and bolts hot dip galvanized, exposed fasteners to match face of unit. Expansion shields fibre, lead or rubber as recommended by accessory manufacturer for component and its intended use.

2.2 COMPONENTS

- .1 Toilet Paper Dispensers (**TP1, TP2**):
 - TP1 – Jumbo roll for Standard stall. Supply by Client, installed by Contractor.
 - TP2 – Double Roll for Accessible Stall. B-265 by Bobrick. Supply and installed by Contractor.
- .2 Soap dispensers (**SD**): Supply by client, installed by contractor. Located not more than 1100mm AFF.

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TOILET AND BATH ACCESSORIES

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- .3 Hand dryers (**HD**): Dyson Airblade V c/w Dyson hand dryer stainless steel back panel– White finish, Supply and install by Contractor.
- .4 Mirror (**MIR**): Bobrick B-165 2448 Channel-Frame mirror (vandal resistant) 24" W x 48" H (61 x 122cm). Supply and installed by Contractor. Locate so that bottom is not more than 1000mm AFF.
- .5 Sanitary Napkin Disposal (**SN**) Supply by client, installed by contractor.
- .6 Stainless steel clothes hook (**CH**) – 1150 safety coat hook by Frost, Supply and installed by Contractor. Install not more than 1200mm AFF.
- .7 'L' Shaped Grab Bar (**GB2**) Stainless Steel - 750mm X 750mm -35mm-40mm DIA. Supply and installed by Contractor. See elevation.
- .8 Horizontal Grab Bar (**GB1**) Stainless Steel - 600mm Min Long - 35mm-40mm DIA. Supply and installed by Contractor. See elevation.
- .9 Toilet Backrest – 1028 by Frost. Supply and installed by Contractor.

2.3 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 1.5mm 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.

2.4 FINISHES

- .1 Chrome and nickel plating: to ASTM B456, satin finish.
- .2 Baked enamel: condition metal by applying one coat of metal conditioner to CGSB 31-GP-107Ma, apply one coat Type 2 primer to CAN/CGSB-1.81 and bake, apply two coats Type 2 enamel to CAN/CGSB-1.88 and bake to hard, durable finish. Sand between final coats. Colour selected from standard range by Architect.
- .3 Manufacturer's or brand names on face of units not acceptable.

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TOILET AND BATH ACCESSORIES

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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 Architect of unacceptable conditions immediately upon discovery.
- .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval from Architect.

3.2 INSTALLATION

- .1 Install and secure accessories rigidly in place as follows:
 - .1 Stud walls: install steel back-plate to stud 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.
 - .4 Toilet and shower compartments: use male to female through bolts.
- .2 Provide 16mm plywood backing between studs in all walls to receive grab bars. Install grab bars on built-in anchors provided by bar manufacturer
- .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 manufacturer's specifications.

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 11- Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11- Cleaning.

3.5 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by toilet and bathroom accessories installation

END OF SECTION

.1 GENERAL

1.1 SUMMARY OF WORK

- .1 Work Included: The work of this Section includes the provision of all labour, materials, equipment and services required to supply and install a manufactured coat rack and shelf system, as indicated on the drawings, as specified herein and as required for a complete project.

1.2 REFERENCES

- .1 Aluminum Association (AA):
 - .1 AA-DAF-45-2009, Designation System for Aluminum Finishes, Ninth Edition.
- .2 American Society for Testing and Materials (ASTM):
 - .1 ASTM B221-14, Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles and Tubes.

1.3 SUBMITTALS

- .1 Shop Drawings:
 - .1 Clearly indicate dimensions, materials, profiles, thicknesses and finishes, construction details, methods of attachment and other pertinent details.
 - .2 Include a schedule of coat rack and shelf assemblies indicating dimensions of each assembly, c/w key plans and referencing system showing the location of each assembly.
- .2 Product Data:
 - .1 Provide manufacturer's product data for the coat rack and shelf system.
 - .2 Include installation instructions.
- .3 Maintenance Data: Provide maintenance data for the coat rack and shelf system for incorporation into the operation and maintenance manual.

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver products in original unopened packaging with legible manufacturer's identification.
- .2 Mark each package with a reference number corresponding to the key plans called for with the shop drawings.
- .3 Store products in original packaging until installation.

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COAT RACK SYSTEM

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1.5 SITE CONDITIONS

- .1 Do not commence installation before the building is closed in and heated.
- .2 Field Measurements: Verify dimensions on site prior to fabrication.

.2 PRODUCTS

2.1 MANUFACTURERS

- .1 This specification is based on coat rack and shelf systems by Architectural School Products.
- .2 Equivalent products manufactured by Global School Products Inc. are acceptable alternatives.

2.2 COAT RACKS

- .1 ASP Student Line Coat Racks Model STL 1001, as follows:
 - .1 Dimensions:
 - .1 Cross section: To manufacturer's standard.
 - .2 Lengths: 1220mm
 - .3 Mounting height: 1600mm AFF
 - .2 Shelf: four square-profile aluminum extrusions c/w plastic end-stops.
 - .3 Brackets: aluminum brackets, predrilled for wall-mounting on dovetail-profile aluminum pilasters and configured to receive the shelf members on edge at a 45 degree angle.
 - .4 Fasteners: as recommended by the manufacturer for the specific substrate.
 - .5 Hooks: Moulded ABS, double prong, non-turning, spaced at 100 mm o.c. and suspended from the shelf members.
 - .6 Finishes:
 - .1 Aluminum surfaces: Electrolytically deposited clear anodic finish, designation AA-M12-C22-A31, Architectural Class II, in accordance with AA DAF-45.
 - .2 ABS: Self-coloured. Colour to be Black

.3 EXECUTION

3.1 EXAMINATION

- .1 Take field measurements to verify or supplement dimensions.

3.2 INSTALLATION

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COAT RACK SYSTEM

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- .1 Install the coat rack and shelf units in accordance with the reviewed and accepted shop drawings and the manufacturer's printed instructions.
- .2 Install at the correct heights, level, plumb and in true alignment and fasten securely in place.

3.3 CLEANING

- .1 Clean surfaces after installation using manufacturer's recommended cleaning procedures.

END OF SECTION