



Request for Quotations
For
Construction of Walter Gretzky Golf Course Maintenance Building

Request for Quotations No.: 2026-42

Issued: April 16, 2026

Submission Deadline: May 12, 2026 at 3:00 PM local time

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PART 1 – INVITATION AND SUBMISSION INSTRUCTIONS

1.1 Invitation to Respondents

This Request for Quotations (the “RFQ”) is an invitation by the City of Brantford (the “City”) to prospective respondents to submit non-binding quotations for the Construction of the Walter Gretzky Golf Course Maintenance Building, as further described in Section A of the RFQ Particulars (Appendix B) (the “Deliverables”).

1.2 City’s Procurement Policy

The City’s procurement processes are governed by the City’s Purchasing Policy Bylaw 83-2025 (the “City’s Policy”). It is the respondent’s responsibility to become familiar with and comply with the City’s Policy, which is available on line at:

<https://www.brantford.ca/en/business-and-development/bids-and-tenders.aspx>

1.3 RFQ Contact

For the purposes of this procurement process, the “RFQ Contact” will be:

Eva Cislo, Coordinator of Purchasing - Capital

Email: evacislo@brantford.ca

Respondents and their representatives are not permitted to contact any employees, officers, agents, elected or appointed officials or other representatives of the City, other than the RFQ Contact, concerning matters regarding this RFQ. Failure to adhere to this rule may result in the disqualification of the respondent and the rejection of the respondent’s quotation.

1.4 Type of Contract for Deliverables

The selected respondent will be requested to enter into a contract for the provision of the Deliverables on the terms and conditions set out in the Form of Agreement (Appendix A) (the “Agreement”). It is the City’s intention to enter into a contract with only one legal entity.

1.5 RFQ Timetable

Issue Date of RFQ	April 16, 2026
Site Visit	April 23, 2026 at 2:00 PM local time
Deadline for Questions	May 4, 2026 at 3:00 PM local time
Deadline for Issuing Addenda	May 7, 2026
Submission Deadline	May 12, 2026 at 3:00 PM local time
Rectification Period	2 business days
Anticipated Execution of Agreement	June 2026

The RFQ timetable is tentative only, and may be changed by the City at any time. For greater clarity, business days means all days that the City is open for business.

Site Meeting Details

Location: Walter Gretzky Golf Course - 320 Balmoral Ave., Brantford

Site Requirements: Respondents to meet the existing Quonset Hut located in the southwest corner of the parking lot (by Balmoral Ave.).

1.6 Submission of Quotations

1.6.1 Electronic Quotation Submission

The City shall only accept and receive electronic quotation submissions through the City's electronic bidding system at: bids.brantford.ca (the "Bidding System").

All respondents must establish a Bidding System vendor account and be registered as a Plan Taker for the procurement opportunity, which will enable the respondent to download the RFQ documents, to receive addenda email notifications, download addenda and to submit their quotation electronically through the Bidding System.

HARD COPY QUOTATION SUBMISSIONS WILL **NOT** BE ACCEPTED.

1.6.2 Multiple or Alternate Bids

Unless otherwise provided for in this RFQ, the City will not accept multiple quotations or alternate quotations from a respondent. The submission of multiple quotations by a respondent may result in the rejection of all of the quotations submitted by that respondent.

1.6.3 Addendum

Any addenda issued by the RFQ Contact shall form part of the bid documents. Respondents must acknowledge receipt of any addenda when submitting their quotation through the Bidding System. Respondents must check a box for each addendum and any applicable attachments that have been issued before a respondent can submit their quotation submission online.

Questions or additional information requested from the RFQ Contact must be submitted in accordance with section 3.2.1. Addendum will typically be issued through the Bidding System, forty-eight (48) hours prior to the Submission Deadline.

To ensure all addenda have been acknowledged, the City encourages respondents not to submit their quotation prior to forty-eight (48) hours before the Submission Deadline. If a respondent submits their quotation and an addendum is issued by the City, the Bidding System shall **WITHDRAW** their quotation submission and change their quotation submission to an **INCOMPLETE STATUS** (not accepted by the City). The withdrawn bid can be viewed by the respondent in the "**MY BIDS**" section of the Bidding System. The respondent is solely responsible to:

- i) review the status of their bid;
- ii) make any required adjustments to their quotation;
- iii) acknowledge the addendum; and
- iv) ensure the re-submitted quotation is RECEIVED by the Bidding System by no later than the Submission Deadline.

1.6.4 Withdrawal or Amendment of Quotations

Quotations are non-binding and may be withdrawn at any time prior to entering into a contract for the provision of the Deliverables. Respondents may withdraw their submission prior to the Submission Deadline through the Bidding System. To withdraw a submission after the Submission Deadline, a notice of withdrawal must be sent to the RFQ Contact and must be signed by an authorized representative of the respondent. The City will not accept amendments to submitted quotations. If a respondent wishes to amend an already submitted quotation prior to the Submission Deadline, the respondent may withdraw the existing quotation and submit a revised quotation prior to the Submission Deadline through the Bidding System. The respondent is solely responsible to ensure the re-submitted quotation is **RECEIVED** by the Bidding System by no later than the Submission Deadline.

1.6.5 Submission Deadline

The closing time shall be determined by the Bidding System web clock.

Respondents are cautioned that the timing of a quotation submission is based on when the quotation is **RECEIVED** by the Bidding System, **not** when a bid is submitted by a respondent, as bid transmission can be delayed in an internet bottleneck due to file transfer size, transmission speed, etc.

[End of Part 1]

PART 2 – EVALUATION AND AWARD

2.1 Stages of Evaluation

The City will conduct the evaluation of quotations in the following stages:

2.2 Stage I – Mandatory Submission Requirements

Stage I will consist of a review to determine which quotations comply with all of the mandatory submission requirements. If a quotation fails to satisfy all of the mandatory submission requirements, the City will issue the respondent a rectification notice identifying the deficiencies and providing the respondent an opportunity to rectify the deficiencies. If the respondent fails to satisfy the mandatory submission requirements within the Rectification Period, its quotation will be excluded from further consideration. The Rectification Period will begin to run from the date and time that the City issues a rectification notice to the respondent. The mandatory submission requirements are listed in Section C of the RFQ Particulars (Appendix B).

2.3 Stage II – Mandatory Technical Requirements

The City will review the quotations to determine whether the mandatory technical requirements as set out in Section D of the RFQ Particulars (Appendix B) have been met. Questions or queries on the part of the City as to whether a quotation has met the mandatory technical requirements will be subject to the verification and clarification process set out in Part 3.

2.4 Stage III – Pricing

Stage III will consist of an evaluation of the submitted pricing in each qualified quotation in accordance with the price evaluation method set out in the Pricing Form. The evaluation of price will be undertaken after the evaluation of mandatory requirements has been completed.

2.5 Selection of Top-Ranked Respondent

After the completion of Stage III, compliant respondents will be ranked based on the price evaluation. Subject to the process rules contained in the Terms and Conditions of the RFQ Process (Part 3), the top-ranked respondent will be invited to enter into the Agreement in accordance with Part 3. In the event of a tie, the tie will be broken in accordance with the City's Policy. The selected respondent will be notified in writing and will be expected to satisfy any applicable conditions of this RFQ, including the pre-conditions of award listed in Section E of the RFQ Particulars (Appendix B) within 10 days, and enter into the Agreement within 30 days, of the date of the notice of selection. Failure to do so may result in the disqualification of the respondent and the selection of another respondent or the cancellation of the RFQ.

[End of Part 2]

PART 3 – TERMS AND CONDITIONS OF THE RFQ PROCESS

3.1 General Information and Instructions

3.1.1 Respondents to Follow Instructions

Respondents should structure their quotations in accordance with the instructions in this RFQ. Where information is requested in this RFQ, any response made in a quotation should reference the applicable section numbers of this RFQ.

3.1.2 Quotations in English

All quotations are to be in English only.

3.1.3 No Incorporation by Reference

The entire content of the respondent's quotation should be submitted in a fixed form, and the content of websites or other external documents referred to in the respondent's quotation but not attached will not be considered to form part of its quotation.

3.1.4 References and Past Performance

In the evaluation process, the City may include information provided by the respondent's references and may also consider the respondent's past performance or conduct on previous contracts with the City or other institutions. The City may disqualify a respondent on the basis of information regarding the respondent's past performance or conduct that the City finds unsatisfactory or unacceptable regardless of the respondent's fee.

3.1.5 Information in RFQ Only an Estimate

The City and its advisers make no representation, warranty or guarantee as to the accuracy of the information contained in this RFQ or issued by way of addenda. Any quantities shown or data contained in this RFQ or provided by way of addenda are estimates only, and are for the sole purpose of indicating to respondents the general scale and scope of the Deliverables. It is the respondent's responsibility to obtain all the information necessary to prepare a quotation in response to this RFQ.

3.1.6 Respondents to Bear Their Own Costs

The respondent will bear all costs associated with or incurred in the preparation and presentation of its quotation, including, if applicable, costs incurred for interviews or demonstrations.

3.1.7 Quotation to be Retained by the City

The City will not return the quotation or any accompanying documentation submitted by a respondent.

3.1.8 No Guarantee of Volume of Work or Exclusivity of Contract

The City makes no guarantee of the value or volume of work to be assigned to the successful respondent. The contract with the selected respondent will not be an exclusive contract for the provision of the described Deliverables. The City may contract with others for goods and services the same as or similar to the Deliverables or may obtain such goods and services internally.

3.2 Communication after Issuance of RFQ

3.2.1 Respondents to Review RFQ

Respondents should promptly examine all of the documents comprising this RFQ, and may direct questions or seek additional information in writing through the Bidding System by using the **SUBMIT A QUESTION** button, on or before the Deadline for Questions.

All questions or comments submitted by respondents will be deemed to be received once the email has entered into the Bidding System's email inbox. No such communications are to be directed to anyone other than the RFQ Contact. The City is under no obligation to provide additional information, and the City is not responsible for any information provided by or obtained from any source other than the RFQ Contact. It is the responsibility of the respondent to seek clarification from the RFQ Contact on any matter it considers to be unclear. The City is not responsible for any misunderstanding on the part of the respondent concerning this RFQ or its process.

Where a named manufacturer, product, 'or approved equivalent' appears in the specification, and an equivalent product is anticipated to meet or exceed the requested product, it is the responsibility of the respondent to submit a question in writing to the RFQ Contact through the Bidding System prior to the Deadline for Questions requesting the approved equivalent be considered. The respondent should be prepared to provide supporting documentation to state the details of the equivalent offered and demonstrate equivalence to the satisfaction of the City. Should the requested approved equivalent be deemed acceptable, in the sole discretion of the City, an addendum will be issued to inform all plan takers of the approved equivalent.

3.2.2 All New Information to Respondents by Way of Addenda

This RFQ may be amended only by addendum in accordance with this section. If the City, for any reason, determines that it is necessary to provide additional information relating to this RFQ, such information will be communicated to all respondents by addendum. Each addendum forms an integral part of this RFQ and may contain important information, including significant changes to this RFQ. Respondents are responsible for obtaining all addenda issued by the City.

3.2.3 Post-Deadline Addenda and Extension of Submission Deadline

If the City determines that it is necessary to issue an addendum after the Deadline for Issuing Addenda, the City may extend the Submission Deadline for a reasonable period of time.

3.2.4 Verify, Clarify and Supplement

When evaluating quotations, the City may request further information from the respondent or third parties in order to verify, clarify or supplement the information provided in the respondent's

quotation, including but not limited to clarification with respect to whether a quotation meets the mandatory technical requirements set out in Section D of the RFQ Particulars (Appendix B). The City may revisit and re-evaluate the respondent's response on the basis of any such information.

3.3 Notification and Debriefing

3.3.1 Notification to Other Respondents

Once an agreement is executed by the City and a respondent, the other respondents will be notified by public posting of the outcome of the RFQ process on the City's website.

3.3.2 Debriefing

Respondents may request a debriefing after receipt of a notification of the outcome of the procurement process. All requests must be in writing to the RFQ Contact and must be made within sixty (60) days of such notification.

3.3.3 Procurement Protest Procedure

If a respondent wishes to challenge the RFQ process, it should provide written notice to the RFQ Contact in accordance with the dispute resolution process set out in the City's Policy and any applicable trade agreement or other applicable bid protest procedures. The notice must provide a detailed explanation of the respondent's concerns with the procurement process or its outcome.

3.4 Conflict of Interest and Prohibited Conduct

3.4.1 Conflict of Interest

For the purposes of this RFQ, the term "Conflict of Interest" includes, but is not limited to, any situation or circumstance where:

- (a) in relation to the RFQ process, the respondent has an unfair advantage or engages in conduct, directly or indirectly, that may give it an unfair advantage, including but not limited to (i) having, or having access to, confidential information of the City in the preparation of its quotation that is not available to other respondents, (ii) communicating with any person with a view to influencing preferred treatment in the RFQ process (including but not limited to the lobbying of decision makers involved in the RFQ process), or (iii) engaging in conduct that compromises, or could be seen to compromise, the integrity of the open and competitive RFQ process or render that process non-competitive or unfair; or
- (b) in relation to the performance of its contractual obligations under a contract for the Deliverables, the respondent's other commitments, relationships or financial interests (i) could, or could be seen to, exercise an improper influence over the objective, unbiased and impartial exercise of its independent judgement, or (ii) could, or could be seen to, compromise, impair or be incompatible with the effective performance of its contractual obligations.

3.4.2 Disqualification for Conflict of Interest

The City may disqualify a respondent for any conduct, situation or circumstances, determined by the City, in its sole and absolute discretion, to constitute a Conflict of Interest as defined above.

3.4.3 Disqualification for Prohibited Conduct

The City may disqualify a respondent, rescind notice of selection or terminate a contract subsequently entered into if the City determines that the respondent has engaged in any conduct prohibited by this RFQ.

3.4.4 Prohibited Respondent Communications

Respondents must not engage in any communications that could constitute a Conflict of Interest and should take note of the Conflict of Interest declaration set out in the Submission Form.

3.4.5 Respondent Not to Communicate with Media

Respondents must not at any time directly or indirectly communicate with the media in relation to this RFQ or any agreement entered into pursuant to this RFQ without first obtaining the written permission of the RFQ Contact.

3.4.6 No Lobbying

Respondents must not, in relation to this RFQ or the evaluation and selection process, engage directly or indirectly in any form of political or other lobbying whatsoever to influence the selection of the successful respondent(s).

3.4.7 Illegal or Unethical Conduct

Respondents must not engage in any illegal business practices, including activities such as bid-rigging, price-fixing, bribery, fraud, coercion or collusion. Respondents must not engage in any unethical conduct, including lobbying, as described above, or other inappropriate communications; offering gifts to any employees, officers, agents, elected or appointed officials or other representatives of the City; deceitfulness; submitting quotations containing misrepresentations or other misleading or inaccurate information; or any other conduct that compromises or may be seen to compromise the competitive process provided for in this RFQ.

3.4.8 Past Performance or Past Conduct

The City may prohibit a supplier from participating in a procurement process based on past performance or based on inappropriate conduct in a prior procurement process, including but not limited to the following:

- (a) illegal or unethical conduct as described above;
- (b) the refusal of the supplier to honour its submitted pricing or other commitments; or
- (c) any conduct, situation or circumstance determined by the City, in its sole and absolute discretion, to have constituted an undisclosed Conflict of Interest.

3.5 Confidential Information

3.5.1 Confidential Information of the City

All information provided by or obtained from the City in any form in connection with this RFQ either before or after the issuance of this RFQ

- (a) is the sole property of the City and must be treated as confidential;
- (b) is not to be used for any purpose other than replying to this RFQ and the performance of any subsequent contract for the Deliverables;
- (c) must not be disclosed without prior written authorization from the City; and
- (d) must be returned by the respondent to the City immediately upon the request of the City.

3.5.2 Confidential Information of Respondent

A respondent should identify any confidential information in its quotation or any accompanying documentation. The City will make reasonable efforts to safeguard confidential information of respondents, subject to its disclosure requirements under the Municipal Freedom of Information and Protection of Privacy Act or any other disclosure requirements imposed by law or by order of a court tribunal. Respondents are advised that their quotations will, as necessary, be disclosed, on a confidential basis, to advisers retained by the City to advise or assist with the RFQ process, including the evaluation of quotations. In addition, respondents are advised that certain contractual information, including pricing information, may be disclosed to City Council and, accordingly, may become part of the public record. If a respondent has any questions about the collection and use of information pursuant to this RFQ, questions are to be submitted to the RFQ Contact.

3.6 Procurement Process Non-binding

3.6.1 No Contract A and No Claims

This procurement process is not intended to create and will not create a formal, legally binding bidding process and will instead be governed by the law applicable to direct commercial negotiations. For greater certainty and without limitation:

- (a) this RFQ will not give rise to any Contract A–based tendering law duties or any other legal obligations arising out of any process contract or collateral contract; and
- (b) neither the respondent nor the City will have the right to make any claims (in contract, tort, or otherwise) against the other with respect to the award of a contract, failure to award a contract or failure to honour a quotation submitted in response to this RFQ.

3.6.2 No Contract until Execution of Written Agreement

This RFQ process is intended to solicit non-binding quotations for consideration by the City and may result in an invitation by the City to a respondent to enter into the Agreement. No legal relationship or obligation regarding the procurement of any good or service will be created

between the respondent and the City by this RFQ process until the execution of a written agreement for the acquisition of such goods and/or services.

3.6.3 Non-binding Price Estimates

While the pricing information provided in quotations will be non-binding prior to the execution of a written agreement, such information will be assessed during the evaluation of the quotations and the ranking of the respondents. Any inaccurate, misleading or incomplete information, including withdrawn or altered pricing, could adversely impact any such evaluation or ranking or the decision of the City to enter into an agreement for the Deliverables.

3.6.4 Cancellation

The City may cancel or amend the RFQ process without liability at any time.

3.7 Governing Law and Interpretation

These Terms and Conditions of the RFQ Process (Part 3):

- (a) are intended to be interpreted broadly and independently (with no particular provision intended to limit the scope of any other provision);
- (b) are non-exhaustive and must not be construed as intending to limit the pre-existing rights of the parties to engage in pre-contractual discussions in accordance with the common law governing direct commercial negotiations;
- (c) are to be governed by and construed in accordance with the laws of the province of Ontario and the federal laws of Canada applicable therein; and
- (d) if a respondent is required by applicable law to hold or obtain a licence, permit, consent or authorization to carry on an activity contemplated in its quotation, neither acceptance of the quotation nor execution of the contract shall be considered to be approval by the City of carrying on such activity without their requisite licence, permit, consent or authorization.

[End of Part 3]

APPENDIX A – FORM OF AGREEMENT

The contract form for the project shall be the Canadian Construction Documents Committee **CCDC-2, 2020** Stipulated Price Contract (not attached hereto but shall form part of the contract) as amended by the City of Brantford's Supplemental General Conditions.



SUPPLEMENTARY CONDITIONS

AMENDMENTS TO CCDC 2-2020 STIPULATED PRICE CONTRACT

These Supplementary Conditions modify, delete and/or add to the Agreement between Owner and Contractor, the Definitions, and the General Conditions of the Stipulated Price Contract, Standard Construction Document CCDC 2 – 2020.

SC 1. AGREEMENT BETWEEN OWNER AND CONTRACTOR

SC 1.1 ARTICLE A-5 PAYMENT

1.1.1 Delete paragraph 5.2 and replace it with the following:

“5.2 Should either party fail to make payments as they become due under this *Contract* or in an award by arbitration, adjudication or court, interest will begin to accrue on the amount that is not paid from the date when it is due until the date it is paid at the prejudgment interest rate prescribed by the Courts of Justice Act (Ontario).”

SC 1.2 ARTICLE A-6 RECEIPT OF AND ADDRESSES FOR NOTICES IN WRITING

1.2.1 Amend paragraph 6.2 by deleting the words “other form of electronic communication” and replacing them with “e-mail”.

1.2.2 Amend paragraph 6.4 by deleting the words “any form of electronic communication” and replacing them with “e-mail”.

SC 1.3 ARTICLE A-10 EXECUTION OF THE CONTRACT

1.3.1 Add a new Article A-10 as follows:

“ARTICLE A-10 EXECUTION OF THE CONTRACT

10.1 This *Contract* may be executed in counterparts and each of which so executed shall be deemed to be an original and such counterparts together shall constitute one and the same instrument and, notwithstanding their date of execution, shall be deemed to bear date as of the date first written above. The parties agree that this *Contract* may be transmitted by electronic transmission (scanned and transmitted by email) or other form of electronic document execution and delivery method (such as DocuSign), and that the reproduction of signatures by way of electronic means will be treated as though such reproductions were executed originals and shall be binding upon each party.”

SC 2. DEFINITIONS

2.1.1 Amend the following Definitions:

(a) Amend the Definition of “**Consultant**” by adding the following to the end:

“For purposes of this *Contract*, the terms “*Consultant*”, “*Architect*” and “*Engineer*”, wherever used in the *Contract Documents*, shall be considered synonymous.”

(b) Amend the Definition of “**Payment Legislation**” so that, as amended, it reads as follows:

“*Payment Legislation* means the Construction Act (Ontario) as amended, and all regulations made thereunder.”

2.1.2 Add the following new Definitions:

(a) **As-Built Drawings**

“*As-Built Drawings* are the drawings prepared by the *Contractor* indicating as-built conditions and changes from the *Drawings* which occur during the course of the *Work* including, but not limited to, the exact location of major building components and structures that were shown generally on the *Drawings*. For certainty, *As-Built Drawings* shall be in computer-aided design (CAD) format approved by the *Owner*, as well as in paper and PDF formats.”

(b) **Deficiency Rectification Security**

"*Deficiency Rectification Security* means the amount to be delivered by the *Contractor* pursuant to paragraph 5.4A.2 of GC 5.4A – DEFICIENCY RECTIFICATION SECURITY."

(c) **Key Personnel**

"*Key Personnel* has the meaning assigned to such term in paragraph 3.5.3 of GC 3.5 – SUPERVISION."

(d) **OHSA**

"*OHSA* means the Occupational Health and Safety Act (Ontario), as amended, and all rules and regulations passed under it."

(e) **Proper Invoice**

"*Proper Invoice* means an application for payment given by the *Contractor* to the *Owner* that fully complies with the requirements of GC 5.1A – PROPER INVOICE."

(f) **Unrecoverable Costs**

"*Unrecoverable Costs* means all costs of head office personnel and overhead costs, standby time or impact costs, any consequential, punitive, exemplary, indirect or special damages, and any loss of profit or loss of opportunity costs and damages, whether incurred or suffered by the *Contractor* or any *Subcontractor* or *Supplier*."

(g) **WSIB**

"*WSIB* means the Ontario Workplace Safety & Insurance Board."

SC 3. GENERAL CONDITIONS

SC 3.1 GC 1.1 CONTRACT DOCUMENTS

3.1.1 Delete paragraph 1.1.1 and replace it with the following:

"1.1.1 The intent of the *Contract Documents* is to include all labour, *Products*, materials, *Construction Equipment* and services necessary or normally considered necessary for the performance of the *Work*. Any item of *Work* mentioned in the *Contract Documents* or reasonably inferable from the *Contract Documents* but not otherwise shown or described, shall be provided by the *Contractor* as if shown or otherwise described or inferable. Any items omitted from the *Contract Documents* which are reasonably necessary or inferable for the completion of the *Work* or related work shall be considered a portion of the *Work* and included in the scope of *Work* to be performed under this *Contract*."

3.1.2 Amend paragraph 1.1.5.1 by changing the order of the first four bullet points so that, as reordered, the bullet points read as follows:

- "- Supplementary Conditions,
- the Agreement between *Owner* and *Contractor*,
- the Definitions,
- the General Conditions"

3.1.3 Add a new paragraph 1.1.5A as follows:

"1.1.5A Notwithstanding paragraph 1.1.5, if there is a conflict or discrepancy between the requirements of two or more *Contract Documents* in relation to the amount or quality of labour or materials required to complete a particular item of *Work*, the *Contractor* shall supply and shall include in the *Work* the labour and materials which would provide the greatest benefit to the *Owner*, as determined by the *Owner*."

3.1.4 Amend paragraph 1.1.9 by adding new paragraphs 1.1.9.1 and 1.1.9.2 as follows:

"1.1.9.1 The *Contract Documents* shall be read as a whole and are the minimum construction requirements. If the *Contractor* finds discrepancies in, or omissions from, the *Drawings*,

Specifications or other *Contract Documents* or has any doubt as to the meaning or intent of any part thereof, he shall at once notify the *Consultant*, who will send written instructions or explanations.

- 1.1.9.2 The *Drawings* are intended to convey the scope of the *Work* and indicate general and approximate locations, arrangement and sizes of fixtures, equipment, outlets, utilities and underground services. The *Contractor* shall obtain more accurate information and shall satisfy itself as to the locations, arrangement and sizes of fixtures, equipment, outlets, utilities and underground services from study and coordination of the *Drawings*, including *Shop Drawings*, and shall become familiar with conditions and spaces affecting these matters before proceeding with the *Work*. Where site conditions require reasonable minor changes to indicated locations and arrangements, the *Contractor* shall make such changes at no additional cost to the *Owner*. Similarly, where known conditions or existing conditions interfere with new installation and require relocation, the *Contractor* shall include such relocation in the *Work* at no additional cost to the *Owner*. The *Contractor* shall arrange and install fixtures and equipment in such a way as to conserve as much headroom and space as possible."

3.1.5 Add new paragraphs 1.1.12 to 1.1.14 as follows:

- "1.1.12 The *Contractor* shall review the *Contract Documents* and shall report promptly to the *Consultant* any error, inconsistency or omission the *Contractor* may discover. Provided it has exercised the degree of care and skill described in GC 3.11 – CONTRACTOR'S STANDARD OF CARE, the *Contractor* shall not be liable for damages or costs resulting from such errors, inconsistencies or omissions in the *Contract Documents* which the *Contractor* did not discover.
- 1.1.13 If the *Contractor* finds any error, inconsistency or omission in the *Contract Documents* or has any doubt as to the meaning or intent of any part thereof, the *Contractor* shall immediately notify the *Consultant*, who will provide written instructions or explanations. Neither the *Owner* nor the *Consultant* will be responsible for oral instructions.
- 1.1.14 Notwithstanding paragraphs 1.1.12 and 1.1.13, errors, inconsistencies and/or omissions shall not include lack of reference on the *Drawings* or in the *Specifications* to labour and/or *Products* that are normally required or normally recognized within respective trade practices as being necessary for the complete execution of the *Work*."

SC 3.2 GC 1.3 RIGHTS AND REMEDIES

3.2.1 Add a new paragraph 1.3.3 as follows:

- "1.3.3 To be effective, the *Owner's* waiver of a right or remedy under this *Contract* must be expressly written by an authorized representative of the *Owner*. For greater certainty, actions of the *Owner* which shall not constitute a waiver include, but are not limited to, the following:
- .1 making partial payments to the *Contractor*;
 - .2 any partial or entire use or occupancy of the *Project*;
 - .3 final acceptance of the *Work*;
 - .4 failure to object to known defects;
 - .5 specifying a list of defects will not be held a waiver of defects not listed."

SC 3.3 GC 1.4 ASSIGNMENT

3.3.1 Delete paragraph 1.4.1 and replace it with the following:

- "1.4.1 The *Owner* may assign the *Contract* or a portion thereof without the consent of the *Contractor* where such assignment is to an entity undertaking the *Project* for the use of the *Owner*. The *Contractor* shall not assign the *Contract* or any portion thereof or its interest therein without the written consent of the *Owner*, which consent may be unreasonably and arbitrarily withheld. In the event of an assignment of the *Contract* by the *Contractor*, such assignment shall not relieve the *Contractor* from its obligations and liabilities under this *Contract*. "

SC 3.4 GC 1.5 CONFIDENTIALITY

3.4.1 Add a new GC 1.5 as follows:

“GC 1.5 CONFIDENTIALITY

1.5.1 The *Contractor* shall keep confidential all matters respecting technical and commercial issues relating to or arising from the performance of the *Contract* and shall not, without the prior written consent of the *Owner*, disclose any such matters, except in strict confidence, to:

- .1 its employees, *Subcontractors* and *Suppliers* who have a need to know the same in order to use the same in connection with the *Work* and the *Project*; and
- .2 its professional advisors but only to the extent as may be required by government authorities or applicable law.

The confidentiality restrictions shall not apply to any information that is required to be disclosed by applicable law, regulations or judicial process. Provided, however, that the *Contractor* shall give *Owner* at least ten (10) *Working Days*’ prior written notice of any intended disclosure together with the relevant provision of law, regulation or judicial process under which the disclosure is intended to be made, and the *Contractor* shall cooperate with the *Owner* and its legal counsel in connection with any protective order or other appropriate remedies the *Owner* may seek to prevent or limit such disclosure.”

SC 3.5 GC 2.2 ROLE OF THE CONSULTANT

3.5.1 Amend paragraph 2.2.12 by adding the following to the end:

“If the *Contractor* believes a *Supplemental Instruction* will result in either a change to the *Contract Price* or the *Contract Time*, the *Contractor* shall, within five (5) *Working Days* of receipt of such *Supplemental Instruction*, provide the *Consultant* with a *Notice in Writing* to that effect and shall await further instructions. The *Contractor*’s failure to provide such *Notice in Writing* within the time stipulated in this paragraph shall be deemed an acceptance of the *Supplemental Instruction* by the *Contractor* without adjustment to the *Contract Price* or *Contract Time*.”

3.5.2 Amend paragraph 2.2.18 by deleting the words “against whom the *Contractor* makes no reasonable objection and”.

SC 3.6 GC 2.4 DEFECTIVE WORK

3.6.1 Amend paragraph 2.4.1 as follows:

- (a) insert the words “, at the *Contractor*’s sole cost and expense,” after the words “The *Contractor* shall” in the first line; and
- (b) add the following to the end:

“The *Contractor* shall promptly pay to the *Owner* all costs, damages and loss incurred by the *Owner* for *Work* destroyed or damaged or for any alterations necessitated by the *Contractor*’s removal, replacement or re-execution of defective portions of the *Work*. The *Owner* shall be entitled to set-off and deduct all such costs, damages and loss against amounts owing to the *Contractor* under this *Contract*.”

3.6.2 Add a new paragraph 2.4.4 as follows:

“2.4.4 The *Contractor* shall prioritize the correction of any defective work or deficiencies identified as priorities by the *Owner* or the *Consultant*.”

SC 3.7 GC 3.1 CONTROL OF THE WORK

3.7.1 Amend paragraph 3.1.2 by adding the word “schedules,” after the word “techniques,”.

3.7.2 Add new paragraphs 3.1.3 to 3.1.6 as follows:

“3.1.3 The *Contractor* is solely responsible for the quality of the *Work* and shall undertake any quality control activities specified in the *Contract Documents* or, if none are specified, as may be reasonably required to ensure such quality. The *Contractor* shall perform the *Work* in accordance with modern practice and in accordance with applicable laws, ordinances, rules, regulations or codes relating to the performance of the *Work*. Without limiting the generality of

the foregoing, the *Contractor* is responsible for coordinating the *Work* so that no part shall be left in an unfinished or incomplete condition.

- 3.1.4 The *Contractor* shall abide by and shall enforce directives and policies regarding signs, advertisements, fires, smoking and vaping at the *Place of the Work* as directed by the *Owner*.
- 3.1.5 The *Contractor*, without in any way limiting its responsibilities under this *Contract*:
- .1 shall perform the *Work* so as to avoid disturbing the occupants of any facilities, premises, or the public in general;
 - .2 shall respect and comply with local regulations and all *Owner's* requirements regarding permitted work hours, noise levels and work conditions;
 - .3 shall abide by and enforce *Owner* directives and policies regarding signs, advertisements, fires and smoking at the *Place of the Work* as directed by the *Owner*;
 - .4 shall take all reasonable steps to avoid interference with fire exits, building or site access and egress, continuity of electric power and all other utilities, to suppress dust and noise, to avoid conditions likely to propagate mould or fungus of any kind, and shall take all other steps reasonably necessary to promote and maintain the safety and comfort of the users and occupants of any facilities, premises and the public in general, and to maintain access to and the operation of any existing facilities at the *Place of the Work*;
 - .5 shall take precautions not to allow any unauthorized visitors entry to the *Place of the Work*;
 - .6 shall not permit any worker or *Subcontractors* to use any existing facilities including, without limitation, elevators, lavatories, toilets, entrances, and parking areas other than those designated by the *Owner*.
- 3.1.6 Prior to commencing the *Work* the *Contractor* shall verify all relevant measurements and levels necessary for proper and complete fabrication, assembly and installation of the *Work* and shall further carefully compare such field measurements and conditions with the requirements of the *Contract Documents*. Where dimensions are not included or exact locations are not apparent in the *Contract Documents*, the *Contractor* shall immediately notify the *Consultant* in writing and shall obtain written instructions before proceeding with any part of the affected *Work*. Failure to do so shall be at the sole risk and cost of the *Contractor*."

SC 3.8 GC 3.2 CONSTRUCTION BY THE OWNER OR OTHER CONTRACTORS

3.8.1 Delete paragraph 3.2.2.

3.8.2 Amend paragraph 3.2.3.4 by adding the following to the end:

"Failure by the *Contractor* to so report shall invalidate any claims against the *Owner* by reason of the deficiencies in the work of *Other Contractors* or *Owner's* own forces except for those deficiencies not then reasonably discoverable; and"

3.8.3 Add a new paragraph 3.2.3.5 as follows:

"3.2.3.5 assume overall responsibility for the *Owner's* own forces and for *Other Contractors* for compliance with all aspects of the applicable health and construction safety legislation at the *Place of the Work*, including all of the responsibilities of the "constructor" under the *OHSA*."

3.8.4 Add a new paragraph 3.2.7 as follows:

"3.2.7 The placement, installation, application and connection of work by the *Owner's* own forces or by *Other Contractors* on and to the *Work* shall not relieve the *Contractor* of its responsibility to provide and maintain the warranties specified in this *Contract*. If the *Contractor* is of the view that the work of *Other Contractors* or the work of the *Owner's* own forces will compromise, void or nullify any of the warranties to be provided pursuant to this *Contract*, the *Contractor* shall immediately give *Notice in Writing* to the *Owner* and shall include in such notice the reasons why, in the *Contractor's* view, a warranty or warranties will be compromised, voided or nullified, together with the *Contractor's* recommendations for avoiding such result."

SC 3.9 GC 3.4 CONSTRUCTION SCHEDULE

3.9.1 Delete paragraph 3.4.1 and replace it with the following:

“3.4.1 The *Contractor* shall:

- .1 within ten (10) *Working Days* of signing this *Contract* submit to the *Owner* and the *Consultant*, for the *Owner's* approval, a construction schedule that indicates the timing of major activities and critical milestone dates for the *Work*, demonstrating that the *Work* will be performed in conformity with the *Contract Time*. Such schedule:
 - (a) shall be prepared using a scheduling software approved in writing by the *Owner*, and
 - (b) shall be provided in both a native editable electronic format that includes and shows all logic links between activities, and in paper format, and
 - (c) shall be prepared in collaboration with, and supported by, the *Subcontractors* and *Suppliers* whose activities affect the critical path of the *Work*, and
 - (d) shall include and make provision for statutory holidays, weather conditions that are normally experienced at the *Place of the Work*, and the rectification of defects and deficiencies, and
 - (e) shall provide sufficient detail of the critical events and their inter-relationship and shall include a baseline schedule indicating the critical path for the *Project*; and
- .2 provide the expertise and resources, including labour and *Construction Equipment*, as are necessary to maintain progress under the construction schedule; and
- .3 monitor the adequacy of *Subcontractor* and *Supplier* personnel and equipment and the availability of *Products* to meet the construction schedule and take appropriate action when requirements of a contract with a *Subcontractor* or *Supplier* are not being met; and
- .4 monitor the progress of the *Work* on a weekly basis relative to the construction schedule, update the schedule on a monthly basis, and immediately advise the *Owner* and the *Consultant* in writing of any variation from the baseline or slippage in the schedule; and
- .5 at each site meeting provide to the *Owner* and the *Consultant* a look-ahead schedule indicating the major activities to be undertaken in the next month.

3.4.2 If at any time the *Contractor* forms the opinion or anticipates that the progress of the *Work* is behind schedule or is likely to fall behind schedule the *Contractor* shall take appropriate steps, at the *Contractor's* own expense, to cause the actual progress of the *Work* to conform to the schedule and shall produce and present to the *Owner* and the *Consultant*, for review and approval, a recovery plan demonstrating how the *Contractor* will achieve recovery of the schedule.

3.4.3 The *Contractor* shall not change the scheduled *Ready-for-Takeover* date.”

SC 3.10 GC 3.4A CONTRACTOR'S MONTHLY REPORTS

3.10.1 Add a new GC 3.4A as follows:

“GC 3.4A CONTRACTOR'S MONTHLY REPORTS

3.4A.1 The *Contractor* shall prepare and deliver a monthly written report to the *Owner* and the *Consultant* on the status of the *Project*. Such monthly report shall include:

- .1 an overview of the state and progress of the *Work*;
- .2 confirmation that the *Work* is on schedule or, if the schedule has suffered slippage, a recovery plan demonstrating how the *Contractor* will achieve recovery of the schedule;
- .3 a list of critical issues of which the *Contractor* is aware and which require resolution, including dates by which decisions are required and by whom;
- .4 proposed or anticipated changes of which the *Contractor* is aware, and their expected impacts on the *Project*;
- .5 claims or anticipated claims of which the *Contractor* is aware, including claims against the *Contractor*, the *Owner*, or the *Project*;
- .6 the *Contractor's* proposed plan and schedule for repairing, correcting or reworking of any defective work;

- .7 an updated construction schedule which conforms to the requirements of paragraph 3.4.1.1 of GC 3.4 – CONSTRUCTION SCHEDULE.

3.4A.2 The *Contractor's* monthly report shall be included with its monthly application for progress payment.”

SC 3.11 GC 3.5 SUPERVISION

3.11.1 Amend paragraph 3.5.1 by adding the following to the end:

“, and upon the *Contractor* obtaining the *Owner's* prior written consent, which consent will not be unreasonably withheld.”

3.11.2 Add a new paragraph 3.5.3 as follows:

“3.5.3 The *Contractor's* key team members and personnel for the *Project* (“**Key Personnel**”) are listed in the Schedule attached to the Supplementary Conditions. The *Contractor* shall ensure the *Key Personnel* remain on the *Project* for the duration of the *Project* and shall not permit any *Key Personnel* to be changed, substituted, replaced or reassigned without the prior written approval of the *Owner*. If the *Owner* approves a change in *Key Personnel*, the *Contractor* shall promptly arrange for an appointment of a replacement person of comparable or greater experience, subject to the *Owner's* written approval. The *Contractor* shall provide to the *Owner* all relevant information on each proposed replacement person, including a current resume and synopsis of the individual's roles on previous projects. All costs associated with the transition of replacement personnel onto the *Project* shall be at the sole cost and expense of the *Contractor*.”

SC 3.12 GC 3.6 SUBCONTRACTORS AND SUPPLIERS

3.12.1 Amend paragraph 3.6.2 as follows:

- (a) by deleting the words “before signing the *Contract*” in the third line; and
- (b) by adding the following to the end:

“If the *Contractor* wishes to change any *Subcontractors* or *Suppliers*, the *Contractor* shall advise the *Owner* in writing and give the reasons for the proposed change. The *Contractor* shall not change *Subcontractors* or *Suppliers* without the *Owner's* prior written approval, which approval will not be unreasonably withheld.”

3.12.2 Amend paragraph 3.6.3 by deleting the words “before the *Owner* has signed the *Contract*,” in the first line.

3.12.3 Add a new paragraph 3.6.7 as follows:

“3.6.7 Notwithstanding paragraph 3.6.5, the *Owner* may assign to the *Contractor*, and the *Contractor* shall accept the assignment of, any contract for *Work* or *Products* required on the *Project* that has been procured or negotiated by or on behalf of the *Owner*. In such event the *Contract Price* shall be increased by the balance of the contract price remaining under such assigned contract.”

SC 3.13 GC 3.7 LABOUR AND PRODUCTS

3.13.1 Amend paragraph 3.7.1 as follows:

- (a) insert the words “agents, *Subcontractors* and *Suppliers*” after the word “employees” in the first line; and
- (b) add the following to the end:

“Without in any way limiting the generality of the foregoing, the *Contractor* shall prepare and implement the job site rules more particularly described in the *Contract Documents*. If no job site rules are described in the *Contract Documents*, the *Contractor* shall draft job site rules for the review and approval of the *Consultant* and the *Owner*. Such job site rules prepared by the *Contractor* shall be consistent with the *Contractor's* duties and obligations under *OHSA*, shall include and incorporate all *Owner's* policies and protocols relating to construction and working in *Owner* facilities, and shall

include provisions making smoking, vaping and the consumption of alcohol or non-prescription drugs on the *Project* site the subject of discipline proceedings and/or termination of employment.”

3.13.2 Add new paragraphs 3.7.4 to 3.7.8 as follows:

- “3.7.4 The *Contractor* shall ensure that all materials and *Products* are delivered to the *Project* site in original containers and packages with labels and seals intact and that they are protected from the elements and visible for inspection by the *Owner* and/or the *Consultant*.
- 3.7.5 The *Contractor* is responsible for the safe on-site storage of *Products* and their protection (including *Products* supplied by the *Owner* and *Other Contractors*) so as to avoid dangerous conditions, deterioration, damage or contamination to the *Products*, persons, or property and in locations at the *Place of the Work* to the satisfaction of the *Owner* and the *Consultant*.
- 3.7.6 The *Owner* or the *Consultant*, acting reasonably, shall have the right to order the *Contractor* to remove from the *Project*, without cost to the *Owner*, any representative or employee of the *Contractor* or any representative or employee of any *Subcontractor* or *Supplier* whose conduct, in the opinion of the *Owner* or the *Consultant*, jeopardizes the safety or security of the *Project*, any person, the *Owner's* operations, is a detriment to the *Project*, or whose behaviour may be considered as harassment in the workplace. Immediately upon receipt of such order the *Contractor* shall make arrangements for the appointment of a replacement representative or employee acceptable to the *Owner*. All costs associated with the transition of replacement staff onto the *Project* shall be at the sole cost and expense of the *Contractor*.
- 3.7.7 The *Contractor* shall not, and shall ensure that its *Subcontractors* and *Suppliers* do not, employ any person on the *Project* whose labour affiliation or lack thereof is incompatible with other labour employed in connection with the *Work*. All costs arising from labour disputes arising from the *Contractor's* failure to comply with this paragraph shall be the sole expense of the *Contractor*.
- 3.7.8 The *Contractor* shall cooperate with the *Owner*, the *Consultant* and their representatives and shall take all reasonable and necessary actions to maintain stable and harmonious labour relations at the *Place of the Work*, including cooperation to attempt to avoid *Work* stoppages, trade union jurisdictional disputes, and other labour disputes.”

SC 3.14 GC 3.8 SHOP DRAWINGS

3.14.1 Amend paragraph 3.8.1 by adding the following to the end:

“Prior to the first application for payment, the *Contractor* shall prepare a schedule for the dates of submission, review and return of *Shop Drawings* and shall deliver it to the *Consultant* and *Owner* for review and approval. The draft *Shop Drawings* schedule shall clearly indicate the phasing of *Shop Drawings* and submissions.”

3.14.2 Add new paragraphs 3.8.8 to 3.8.11 as follows:

- “3.8.8 Reviewed *Shop Drawings* shall not authorize a change in the *Contract Price* or the *Contract Time*.
- 3.8.9 The *Contractor* shall not use the term “by others” on *Shop Drawings* and shall identify the responsible *Subcontractor* or *Supplier* where such work is within the scope of the *Work*.
- 3.8.10 Where *Specifications* require the *Shop Drawings* to bear the seal and signature of a professional, such professional shall be registered in the jurisdiction of the *Place of the Work* and shall have expertise in the area of practice reflected in the *Shop Drawings*.
- 3.8.11 The *Consultant's* review of the *Shop Drawings* shall not relieve the *Contractor* from responsibility for defective *Work* resulting from errors or omissions of any kind on the reviewed *Shop Drawings* and shall not constitute authorization to the *Contractor* to perform additional *Work* or changed *Work*. The *Contractor* is solely responsible for dimensions to be confirmed and correlated at the job site, for information that pertains solely to fabrication processes, and for techniques of construction and installation.”

SC 3.15 GC 3.9 USE OF THE WORK

3.15.1 Add a new GC 3.9 as follows:

"GC 3.9 USE OF THE WORK

- 3.9.1 The *Contractor* shall confine *Construction Equipment*, *Temporary Work*, storage of *Products*, waste products and debris, and operations of employees, *Subcontractors* and *Suppliers* to limits indicated by laws, ordinances, permits, or the *Contract Documents*, and shall not unreasonably encumber the *Place of the Work*.
- 3.9.2 The *Contractor* shall not load or permit to be loaded any part of the *Work* with a weight or force that will endanger the safety of the *Work*."

SC 3.16 GC 3.10 CLEANUP

3.16.1 Add a new GC 3.10 as follows:

"GC 3.10 CLEANUP

- 3.10.1 The *Contractor* shall:
- .1 maintain the *Work* and the *Place of the Work* in a safe and tidy condition and free from the accumulation of waste products and debris;
 - .2 ensure the *Place of the Work* is cleaned and left in a tidy condition on a daily basis.
- If the *Contractor* fails to remove waste and debris as provided in this GC 3.10, then, the *Owner* may remove such waste and debris and deduct from payments otherwise due to the *Contractor* the costs of doing so.
- 3.10.2 Before delivering the application for *Ready-for-Takeover* the *Contractor* shall remove all surplus *Products*, tools, *Construction Equipment*, *Temporary Work*, waste products and debris and shall ensure the *Place of the Work* is clean and tidy and suitable for occupancy by the *Owner*."

SC 3.17 GC 3.11 CONTRACTOR'S STANDARD OF CARE

3.17.1 Add a new GC 3.11 as follows:

"GC 3.11 CONTRACTOR'S STANDARD OF CARE

- 3.11.1 In performing this *Contract* the *Contractor* shall exercise a standard of care, skill, judgment and diligence that would normally be exercised by an experienced, skilled and prudent contractor performing similar work for similar projects. The *Contractor* acknowledges and agrees that, throughout this *Contract*, the *Contractor's* obligations, duties and responsibilities shall be interpreted in accordance with this standard. The *Contractor* shall exercise the same standard of care, skill, judgment and diligence in respect of any *Products*, *Subcontractors*, *Suppliers*, personnel or procedures which it may employ on the *Project*.
- 3.11.2 The *Contractor* represents, covenants and warrants to the *Owner* that:
- .1 the *Contractor's* personnel assigned to the *Project* are appropriately experienced and trained;
 - .2 it has sufficient qualified and competent personnel to replace its designated supervisor, superintendent and project manager, subject to the *Owner's* approval, in the event of incapacity, removal or resignation; and
 - .3 there are no pending, threatened or anticipated claims that would have a material effect on the financial ability of the *Contractor* to perform this *Contract*."

SC 3.18 GC 3.12 CONTRACTOR'S USE OF PERMANENT EQUIPMENT OR SYSTEMS

3.18.1 Add a new GC 3.12 as follows:

"GC 3.12 CONTRACTOR'S USE OF PERMANENT EQUIPMENT OR SYSTEMS

- 3.12.1 The *Contractor* shall not make use of elements of the mechanical and electrical systems or equipment comprising a permanent part of the *Work*, including the HVAC system and elevators, without the *Owner's* prior express written consent obtained in accordance with this GC 3.12.
- 3.12.2 If the *Contractor* wishes to make use of such systems or equipment the *Contractor* shall, before using such systems or equipment:

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- .1 obtain the manufacturer's instructions regarding the preventative maintenance services to be performed on such systems and equipment; and
 - .2 submit a written request to the *Owner* for consent to use such systems or equipment, which request shall include all of the information received from the manufacturer of such systems or equipment and shall include the *Contractor's* comprehensive operation and preventative maintenance plan for such systems and equipment.
- 3.12.3 If the *Owner* issues a written consent to the *Contractor's* use of elements of the mechanical and electrical systems or equipment comprising a permanent part of the *Work*, the *Contractor* shall:
- .1 operate and maintain such systems and equipment in strict compliance with the requirements set out in the *Specifications*, any instructions received from the manufacturers of such systems and equipment, and the *Contractor's* comprehensive operation and preventative maintenance plan; and
 - .2 perform all preventative maintenance services on such systems and equipment in accordance with the *Specifications*, any instructions received from the manufacturers of such systems and equipment, and the *Contractor's* comprehensive operation and maintenance plan; and
 - .3 before applying for *Ready-for-Takeover*, clean and make good, to the satisfaction of the *Owner*, all such systems and equipment as it had been permitted to use; and
 - .4 pay any and all costs associated with such use, operation, preventative maintenance services, cleaning and making good at no cost or charge to the *Owner*."

SC 3.19 GC 4.1 CASH ALLOWANCES

3.19.1 Add a new paragraph 4.1.8 as follows:

- "4.1.8 The *Owner* reserves the right to call, or to have the *Contractor* call, for competitive bids for portions of the *Work* to be paid for from cash allowances."

SC 3.20 GC 5.1 FINANCING INFORMATION REQUIRED OF THE OWNER

3.20.1 Delete GC 5.1.

SC 3.21 GC 5.1A PROPER INVOICE

3.21.1 Add a new GC 5.1A as follows:

"GC 5.1A PROPER INVOICE

- 5.1A.1 In this *Contract* a *Proper Invoice* shall mean an application for payment made by the *Contractor* that:
- .1 is given to the *Owner* monthly by e-mail sent to "●.com" and is sent concurrently to the *Consultant* by e-mail, or as the *Owner* may otherwise direct; and
 - .2 includes all of the following:
 - .1 the *Contractor's* name and address and HST registration number;
 - .2 the date of the application for payment and the period during which the services or materials were supplied;
 - .3 information identifying the authority, whether in the *Contract* or otherwise, under which the services or materials were supplied, including the applicable RFQ (2026-42) and purchase order number (OS XXXX);
 - .4 a description, including quantities where appropriate, of the services and materials that were supplied;
 - .5 the amount payable for the services or materials that were supplied, and the payment terms. Ensure the amounts align with the *Contractor's* pricing form;
 - .6 the name, title, telephone number and mailing address of the person to whom payment is to be sent;
 - .7 copies of all *Change Orders* and *Change Directives* for which the *Contractor* is claiming payment together with all backup documentation;

- .8 a statement based on the schedule of values for the *Work*,
- .9 for all applications for payment except the final payment, the monthly report required by GC 3.4A – CONTRACTOR'S MONTHLY REPORTS, including an updated construction schedule which complies with the requirements of paragraph 3.4.1.1 of GC 3.4 – CONSTRUCTION SCHEDULE;
- .10 a current valid clearance certificate issued by the *WSIB*;
- .11 for the second and all subsequent applications for payment, a CCDC 9A Statutory Declaration stating that all accounts for services and materials and other indebtedness incurred by the *Contractor* for which the *Owner* may in any way be held responsible have been paid in full, except for amounts properly retained as a holdback or as an identified matter in dispute."

SC 3.22 GC 5.2 APPLICATIONS FOR PAYMENT

3.22.1 Delete paragraphs 5.2.1 and 5.2.2 and replace them with the following:

- "5.2.1 *Proper Invoices* for progress payment shall be given monthly to the *Owner* and the *Consultant* as the *Work* progresses on a day of the month agreed to by the parties.
- 5.2.2 Five (5) *Working Days* before submitting a *Proper Invoice* the *Contractor* shall convene a meeting with the *Owner*, the *Consultant*, and those *Subcontractors* whose *Work* is to be included in the *Proper Invoice*, for the purpose of reviewing the progress of the *Work* and to review a draft *Proper Invoice*. For certainty, the purpose of such meeting is not to pre-certify or pre-approve the *Proper Invoice*."

3.22.2 Amend paragraph 5.2.3 by adding the following to the end:

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

3.22.3 Delete paragraph 5.2.4 and replace it with the following:

- "5.2.4 The *Contractor* shall, within 15 *Working Days* after signing this *Contract*, submit to the *Consultant*, for the *Consultant's* approval, 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. Such schedule of values:
 - .1 shall include a detailed breakdown of the *Work*; and
 - .2 shall include line items which assign an appropriate portion of the *Contract Price* for the preparation and delivery of *As-Built Drawings*, quality control, and closeout of the *Work*.Once approved, this schedule of values shall be the basis of payment unless shown to be in error."

3.22.4 Amend paragraph 5.2.6 by adding the following to the end:

", as modified by paragraph 5.1A.1.2 of GC 5.1A – PROPER INVOICE."

3.22.5 Amend paragraph 5.2.8 by adding the following to the end:

"Any *Products* delivered to the *Place of the Work* but not yet incorporated into the *Work* shall remain at the risk of the *Contractor* notwithstanding that title has passed to the *Owner* pursuant to GC 14.2 – OWNERSHIP OF MATERIALS."

SC 3.23 GC 5.3 PAYMENT

3.23.1 Delete paragraph 5.3.1 and replace it with the following:

- "5.3.1 After receipt by the *Consultant* and the *Owner* of an application for progress payment given by the *Contractor* in accordance with GC 5.2 – APPLICATIONS FOR PAYMENT, the *Consultant* will issue to the *Owner* and copy to the *Contractor*, no later than 10 calendar days after the date of receipt of a *Proper Invoice*, a certificate for payment in the amount applied for, or in such other amount as the *Consultant* determines to be properly due.

- 5.3.2 Subject to the *Owner's* right to give notice of non-payment in accordance with the *Payment Legislation*, and subject to the applicable statutory holdback provisions, the *Owner* will pay the amount payable under a *Proper Invoice* for progress payment no later than 28 days after the date the *Owner* receives the *Proper Invoice*. Provided that the *Owner's* obligation to make payment shall not arise unless and until the *Contractor's* application for payment constitutes a complete *Proper Invoice* as provided in GC 5.1A – PROPER INVOICE. For certainty, and without limitation, the *Owner* may refuse to pay all or any portion of an application for payment where:
- .1 the application does not comply with all of the requirements of a *Proper Invoice* in GC 5.1A – PROPER INVOICE; and/or
 - .2 the *Owner* is entitled to deduct and retain amounts in accordance with the *Contract Documents*; and/or
 - .3 the amount applied for exceeds the amount certified for payment by the *Consultant* in the certificate for payment issued pursuant to paragraph 5.3.1."

SC 3.24 GC 5.4 SUBSTANTIAL PERFORMANCE OF THE WORK AND PAYMENT OF HOLDBACK

- 3.24.1 Delete paragraphs 5.4.2 to 5.4.4 and replace them with the following:

- "5.4.2 Immediately after the issuance of the certificate of *Substantial Performance of the Work*, the *Contractor*:
- .1 shall, in consultation with the *Owner* and the *Consultant*, establish reasonable dates for *Ready-for-Takeover* and for finishing the *Work* and correcting deficient *Work*; and
 - .2 shall cause the certificate to be published in the manner prescribed by the *Payment Legislation* and shall immediately deliver a copy of the published certificate to the *Owner*.
- 5.4.3 The *Contractor* shall submit an application for payment of the lien holdback amount which shall include all of the following.
- .1 a written request for the release of the holdback amount;
 - .2 a declaration that no written notices of lien have been received by the *Contractor*;
 - .3 a copy of the published certificate of *Substantial Performance of the Work*;
 - .4 a current *WSIB* clearance certificate; and
 - .5 a CCDC 9A Statutory Declaration stating that all accounts for services and materials and other indebtedness incurred by the *Contractor* for which the *Owner* may in any way be held responsible have been paid in full, except for amounts properly retained as a holdback or as an identified matter in dispute.
- 5.4.4 Subject to the *Owner's* right to give notice of non-payment of holdback in accordance with the *Payment Legislation*, the *Owner* will pay the amount authorized by the certificate for payment of the holdback in accordance with the *Payment Legislation*."

- 3.24.2 Delete paragraph 5.4.5 and replace it with the following:

- "5.4.5 The *Contractor* may request the *Owner* to direct the *Consultant* to make a determination whether a *Subcontractor* contract has been completed prior to *Substantial Performance of the Work*. If the *Owner* agrees to so direct the *Consultant*, the *Contractor* shall submit documentation clearly identifying the *Work* and the *Subcontractor* involved and such other documents as are stipulated by the *Payment Legislation* or requested by the *Owner* or the *Consultant*. For greater certainty, the *Owner's* decision whether or not to direct the *Consultant* to determine if a *Subcontractor* contract has been completed is at the *Owner's* sole discretion.
- 5.4.5A If, after being directed to do so by the *Owner* pursuant to paragraph 5.4.5, the *Consultant* determines that a *Subcontractor* contract has been completed prior to *Substantial Performance of the Work*, the *Consultant* shall complete and issue a certificate of completion of subcontract in the form prescribed by the *Payment Legislation* and the *Owner* shall pay the *Contractor* the holdback amount retained for such subcontract work after the expiry of the applicable holdback period stipulated in the *Payment Legislation*."

SC 3.25 GC 5.4A DEFICIENCY RECTIFICATION SECURITY

3.25.1 Add a new GC 5.4A as follows:

“GC 5.4A DEFICIENCY RECTIFICATION SECURITY

- 5.4A.1 The *Contractor* shall, within 25 days after the date of *Substantial Performance of the Work*, deliver to the *Owner* the *Deficiency Rectification Security* in the amount determined in accordance with paragraph 5.4A.2 in the form of:
- .1 an irrevocable standby letter of credit in a form satisfactory to the *Owner*; or
 - .2 a certified cheque or bank draft payable to the *Owner*.
- 5.4A.2 The amount to be paid by the *Contractor* (the “**Deficiency Rectification Security**”) shall be:
- .1 if the *Contract Price* is less than \$100,000, the amount of \$5,000 plus *Value Added Taxes*, or such other amount as the *Owner* may require;
 - .2 if the *Contract Price* is \$100,000 or more but is less than \$1,500,000, the amount equivalent to 5% of the *Contract Price*, plus *Value Added Taxes*;
 - .3 if the *Contract Price* is \$1,500,000 or more but is less than \$2,500,000, the amount equivalent to 3% of the *Contract Price*, plus *Value Added Taxes*;
 - .4 if the *Contract Price* is \$2,500,000 or more, the amount equivalent to 1.5% of the *Contract Price*, plus *Value Added Taxes*.
- 5.4A.3 If the *Contractor* fails to deliver the *Deficiency Rectification Security* in accordance with paragraphs 5.4A.1 and 5.4A.2, the *Owner* may deduct and retain the *Deficiency Rectification Security* from any amount owing to the *Contractor*, and such retained amount shall take the place of and shall become the *Deficiency Rectification Security*.
- 5.4A.4 The *Owner* will use the *Deficiency Rectification Security* to cover the costs of correcting defects, deficiencies or non-compliant items of *Work* which appear prior to and during the warranty period, as described in paragraph 12.3.5A of GC 12.3 – WARRANTY.”

SC 3.26 GC 5.5 FINAL PAYMENT

3.26.1 Delete paragraph 5.5.1 and replace it with the following:

- “5.5.1 When the *Contractor* considers that the *Work* is completed, the *Contractor* shall deliver a *Proper Invoice* for final payment.”

3.26.2 Amend paragraph 5.5.2 by adding the following to the end:

“Without limiting the generality of the foregoing, the application for final payment will not be considered valid until *Products* installed are tested and conform to the requirements specified in the *Contract Documents* and all documents required by the *Contract Documents* have been received and accepted by the *Consultant*.”

3.26.3 Delete paragraphs 5.5.3 and 5.5.4 and replace them with the following:

- “5.5.3 Subject to the *Owner*’s right to give notice of non-payment in accordance with the *Payment Legislation*, the *Owner* will pay the amount payable under a *Proper Invoice* for final payment no later than 28 days after the date the *Owner* receives the *Proper Invoice*. Provided that the *Owner*’s obligation to make payment shall not arise unless and until the *Contractor*’s application for payment constitutes a complete *Proper Invoice* as provided in GC 5.1A – PROPER INVOICE.”

SC 3.27 GC 5.8 WITHHOLDING OF PAYMENT

3.27.1 Add a new GC 5.8 as follows:

“GC 5.8 WITHHOLDING OF PAYMENT

- 5.8.1 Notwithstanding any provision in the *Contract Documents* to the contrary, the *Owner* may withhold payment of any amount claimed in an application for payment, in a *Proper Invoice*, or in any certificate for payment to the extent required to offset any claims the *Owner* may have

against the *Contractor*, or to offset previous overpayment made to the *Contractor*, or for damages or costs incurred by the *Owner*, or to the extent as may be necessary to protect and/or indemnify the *Owner* from loss, claims and/or damage, including from loss, claims and/or damage arising as a result of:

- .1 the *Contractor's* failure to perform any of its material obligations or where the *Contractor* is otherwise in default under the *Contract Documents*, whether or not the *Contractor* has been noted in default;
- .2 defective *Work* not remedied;
- .3 damage done to work performed by *Other Contractors* or by the *Owner's* own forces;
- .4 the *Contractor's* failure to make prompt payments to its *Subcontractors* and *Suppliers* respecting *Work* for which the *Owner* has made payment to the *Contractor*;
- .5 claims or reasonable evidence indicating possible commencement of claims for which the *Contractor* may be responsible to indemnify the *Owner*;
- .6 the *Contractor's* failure to remove liens arising from the *Work* or to otherwise satisfy its obligations under GC 14.2 – LIENS AND ACTIONS;
- .7 reasonable evidence the *Contractor* will not attain *Ready-for-Takeover* in accordance with the construction schedule or within the *Contract Time*;
- .8 any claim for which the *Owner* is entitled to indemnification from the *Contractor* pursuant to the *Contract Documents*.

- 5.8.2 Where the *Owner* has withheld payment to the *Contractor* pursuant to the provisions of this *Contract*, the *Owner* shall be entitled to apply the funds withheld toward the costs of any required remedial work, completion costs or toward damages or losses suffered and for which the *Owner* is entitled to compensation under this *Contract*, including legal costs and expenses."

SC 3.28 GC 6.1 OWNER'S RIGHT TO MAKE CHANGES

- 3.28.1 Amend paragraph 6.1.2 by adding the following to the end:

"All such changes require approval by a representative of the *Owner* with proper signing authority. The requirement that the *Contractor* obtain a *Change Order* or a *Change Directive* is of the essence and it is the express intention of the parties that any claims by the *Contractor* for a change in the *Contract Price* and/or *Contract Time* shall be barred unless there is strict compliance with PART 6 – CHANGES IN THE WORK. No course of conduct or dealings between the parties, no express or implied acceptance of alterations or additions to the *Contract* or the *Work*, and no claims that the *Owner* has been unjustly enriched by any alteration or addition to the *Work*, whether or not there is any such unjust enrichment, shall be the basis of a claim for damages or additional payment or for a change in the *Contract Price* or *Contract Time*. Without limiting the generality of the foregoing, under circumstances of expediency the *Contractor* shall proceed with a change in the *Work* without first obtaining a *Change Order* or a *Change Directive* where it has received from the *Owner* or the *Owner's* authorized representative some form of written or e-mail direction agreeing to the change, in which case such change, and the value of such change, if any, will be determined pursuant to GC 6.2 or GC 6.3, at the option of the *Owner*."

SC 3.29 GC 6.2 CHANGE ORDER

- 3.29.1 Add new paragraphs 6.2.3 to 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 *Owner*:
- .1 by estimate and acceptance of a lump sum. The lump sum shall include overhead, profit and other reasonable charges and mark-ups and shall be the total cost to the *Owner*; or
 - .2 by unit prices established in the *Contract Documents* or subsequently agreed upon. Unit prices shall include all costs related to *Products*, labour, equipment, delivery and handling, statutory charges, overhead and profit, other related charges, and shall include all applicable duties (excluding HST), and shall be the total cost to the *Owner*. Adjustment to the *Contract Price* shall be based on a net quantity difference from the original quantity; or
 - .3 by actual credits and cost to the *Owner*. The cost to the *Owner* shall be the actual cost plus the following percentage fee for overhead and profit after all credits included in the change have been deducted. For certainty, no mark-up or other charges shall be permitted for

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overhead and profit where the change results in a net decrease (credit) to the *Contract Price*:

- (a) on *Work* performed by the *Contractor's* own forces, the *Contractor* may charge a maximum mark-up of 5% as a combined percentage fee for overhead and profit;
- (b) on *Work* performed by *Subcontractors*, the *Subcontractors* may charge a maximum mark-up of 5% as a combined percentage fee for overhead and profit, and the *Contractor* may charge a maximum mark-up of 5% as a combined percentage fee for overhead and profit on the aggregate of the *Work* performed by *Subcontractors* (excluding the *Subcontractors'* fee mark-up).

- 6.2.4 The mark-ups referred to in paragraph 6.2.3.3 shall constitute the only compensation the *Contractor* shall be entitled to for any and all overhead, profit, general expenses, incidental and administrative costs whatsoever related to the change including, but not limited to, costs relating to superintendence and supervision, general cleanup, *Shop Drawing* production, estimating, site office and head office expenses and personnel, administration costs, workers' tools, temporary facilities and controls, record drawings, *As-Built Drawings*, use of scheduling and modelling software, warranty, insurance, bonding, job safety costs, and coordination of any and all *Work*-related activities.
- 6.2.5 No claim whatsoever for a change in the *Contract Time*, delay, prolongation charges, remobilization or otherwise shall be permitted with respect to a change, unless first authorized by the *Consultant* and approved by the *Owner* and set out in a *Change Order*. For certainty, an adjustment to the *Contract Time* will be considered only when the *Contractor* demonstrates to the *Owner* that a change in the *Work* affects the critical path of the *Work*. Any costs associated with an adjustment to the *Contract Time* shall be identified by the *Contractor* and shall be limited to the reasonable direct costs directly attributable to the adjustment to the *Contract Time*.
- 6.2.6 The *Contractor* shall not be entitled to any additional compensation or an adjustment to the *Contract Time* arising out of changes to the *Work* aside from the amounts stated in a *Change Order*. In no event shall the *Owner* be liable to the *Contractor* for any costs, including indirect, impact or consequential costs, arising out of changes to the *Work* beyond the agreed upon amount of the *Change Order*."

SC 3.30 GC 6.3 CHANGE DIRECTIVE

3.30.1 Amend paragraph 6.3.7 by inserting the words "Subject to paragraph 6.3.14," at the beginning.

3.30.2 Amend paragraph 6.3.12 by inserting the following to the beginning:

"An adjustment to the *Contract Time* will be considered only where the change affects the critical path of the *Work*."

3.30.3 Add a new paragraph 6.3.14 as follows:

- "6.3.14 Without limitation, the following shall not form part of the cost of performing the work attributable to a *Change Directive*, and shall not be recoverable by the *Contractor*:
 - .1 head office salaries and benefits and all other overhead or general expenses, except only for the amounts described in paragraph 6.3.7.1;
 - .2 capital expenses and interest on capital;
 - .3 general clean-up, except where the performance of the work attributed to the *Change Directive* causes specific additional clean-up requirements;
 - .4 wages paid for field supervision of *Subcontractors* and *Suppliers* and for project managers, assistants, watch persons and administrative personnel;
 - .5 wages, salaries, rentals or other expenses that exceed the rates that are standard in the locality of the *Place of the Work* or that are otherwise deemed unreasonable by the *Consultant*;
 - .6 costs or expenses attributable to the negligence, improper work, deficiencies, or breaches of contract by the *Contractor* or any *Subcontractor* or *Supplier*;

- .7 costs of quality assurance, such as inspection and testing services, charges levied by authorities having jurisdiction, and any legal fees unless any such costs or fees are pre-approved in writing by the *Owner*; and
- .8 the costs of the items listed in paragraph 6.2.4 of GC 6.2 – CHANGE ORDER.”

SC 3.31 GC 6.4 CONCEALED OR UNKNOWN CONDITIONS

3.31.1 Add a new paragraph 6.4.0 as follows:

“6.4.0 The *Contractor* confirms that, before signing this *Contract*, it carefully investigated and examined the *Place of the Work*, the *Contract Documents* and any other documents made available by the *Owner*, and has satisfied itself as to the conditions, circumstances, limitations and requirements necessary for the *Contractor* to perform the *Work* in accordance with the *Contract Documents*. No allowances will be made for additional costs and no claims by the *Contractor* will be considered for an adjustment in the *Contract Price* or *Contract Time* in connection with conditions which were reasonably apparent or which could reasonably have been discovered before the signing of this *Contract*.”

3.31.2 Amend paragraphs 6.4.1.1 and 6.4.1.2 by adding the following to the end of each paragraph:

“and which were concealed from discovery notwithstanding the conduct of the investigations and examinations described in paragraph 6.4.0.”

SC 3.32 GC 6.5 DELAYS

3.32.1 Amend paragraph 6.5.1 by deleting the last sentence and replacing it with the following:

“The *Contractor* shall be reimbursed by the *Owner* for reasonable direct costs directly flowing from the delay, but excluding all *Unrecoverable Costs*.”

3.32.2 Amend paragraph 6.5.2 by deleting the last sentence and replacing it with the following:

“The *Contractor* shall be reimbursed by the *Owner* for reasonable direct costs directly flowing from the delay, but excluding all *Unrecoverable Costs*. Provided that this paragraph 6.5.2 shall not apply where the stop work order is issued as a result of a declaration of a state of emergency or the occurrence of an epidemic or pandemic, in which case any resulting delay shall be governed by paragraph 6.5.3.”

3.32.3 Amend paragraph 6.5.3 as follows:

(a) add a new subparagraph 6.5.3.0 as follows:

“6.5.3.0 acts, orders, legislation, regulations or directives of any court, government or other public authority, including stop work orders or *Project* closures or suspensions, made or issued as a result of a declaration of a state of emergency or the occurrence of an epidemic or pandemic,”

(b) add a new subparagraph 6.5.3.5 as follows:

“6.5.3.5 demonstrations and protests including, but not limited to, native protests, sit-ins, blockages, riots, insurrections and uprisings,”

3.32.4 Amend paragraph 6.5.4 by adding the following to the end:

“For certainty:

- .1 the fact there may be a discussion of or relating to delay during a meeting or the fact delay may be mentioned in minutes of meetings does not constitute *Notice in Writing* of the cause of delay nor an effective notice of delay; and
- .2 it is the intention of the parties that an extension for delay will be considered only when the *Contractor* demonstrates that the delay affects the critical path of the *Work* and that reasonable mitigation efforts have been attempted to reduce the delay and the costs associated therewith, and any adjustment to the *Contract Time* shall only be to the extent that the critical path of the *Work* is affected.”

3.32.5 Add new paragraphs 6.5.6 to 6.5.8 as follows:

- “6.5.6 The *Contractor* acknowledges and agrees that the *Owner* shall not be liable for any delay or part thereof that occurs concurrently with an independent cause of delay for which the *Owner* is not responsible. In addition, in the event the *Owner* is responsible for two or more separate causes of delay that run in whole or in part parallel to each other, those two or more events shall be considered as one for the purpose of determining the duration of the extension of the *Contract Time* and/or any amount payable to the *Contractor*.
- 6.5.7 The *Contractor* shall be responsible for the care, maintenance and protection of the *Project* in the event of any suspension of the *Work* as a result of the delay described in paragraphs 6.5.1, 6.5.2 and 6.5.3 and shall be reimbursed by the *Owner* for the reasonable direct costs incurred by the *Contractor* for such care, maintenance and protection, but excluding the *Contractor's* head office personnel and overhead costs.
- 6.5.8 If the *Contractor* is delayed in the performance of the *Work* by an act or omission of the *Contractor* or anyone directly or indirectly employed or engaged by the *Contractor*, or by any cause within the *Contractor's* control, then:
- .1 the *Contractor* shall, at the *Contractor's* own expense, make best efforts to minimize the delay, including working extended shifts or weekends; and
 - .2 the *Contract Time* shall be extended for such reasonable time as the *Consultant* may decide in consultation with the *Owner*.
- In addition, the *Contractor* shall reimburse the *Owner* for all reasonable costs and expenses incurred by the *Owner* as a result of the delay including, but not limited to, the costs of additional services required by the *Owner* from the *Consultant* or any other consultants, project managers, contractors, or others employed or engaged by the *Owner*.”

SC 3.33 GC 7.1 OWNER'S RIGHT TO PERFORM THE WORK, TERMINATE THE CONTRACTOR'S RIGHT TO CONTINUE WITH THE WORK OR TERMINATE THE CONTRACT

3.33.1 Delete paragraph 7.1.2 and replace it with the following:

- “7.1.2 If the *Contractor* neglects to prosecute the *Work* properly, or fails or neglects to maintain the construction schedule, or otherwise fails to comply with the requirements of the *Contract* to a material extent, the *Owner* may, without prejudice to any other right or remedy the *Owner* may have, notify the *Contractor* in writing 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, but without affecting in any respect the liability of the *Contractor* in respect of earlier defaults.”

3.33.2 Add a new paragraph 7.1.5A as follows:

- “7.1.5A If the *Owner* terminates the *Contractor's* right to continue with the *Work* in whole or in part or terminates the *Contract* as provided in this GC 7.1, the *Contractor* shall deliver to the *Owner*, within 5 days of the effective date of the termination, all of the materials listed in paragraph 12.1.1 of GC 12.1 – READY-FOR-TAKEOVER in the possession of or available to the *Contractor*.”

3.33.3 Add a new paragraph 7.1.7 as follows:

- “7.1.7 The *Owner* may terminate this *Contract* for convenience at any time for any or no reason by giving written notice to the *Contractor*. In such event, the *Owner* shall pay for the *Work* performed up to the effective date of termination, including demobilization costs, and for such additional reasonable direct costs, if any, directly flowing from and which are a reasonable consequence of the termination, but excluding all *Unrecoverable Costs*. The *Owner* shall not be liable to the *Contractor* for any other claims, costs or damages whatsoever arising from such termination of this *Contract*.”

SC 3.34 GC 7.2 CONTRACTOR'S RIGHT TO SUSPEND THE WORK OR TERMINATE THE CONTRACT

3.34.1 Amend paragraph 7.2.2 by deleting “20 *Working Days*” in the first line and replacing it with “40 *Working Days*.”

3.34.2 Amend paragraph 7.2.3 as follows:

- (a) delete paragraphs 7.2.3.1 and 7.2.3.2;
- (b) delete paragraphs 7.2.3.3 and 7.2.3.4 and replace them with the following:

“7.2.3.3 the *Owner* fails to pay the *Contractor* when due the amount certified by the *Consultant* or awarded by arbitration or a court; provided that this paragraph shall not apply to the *Owner's* withholding of payments in accordance with the *Contract Documents*, or

7.2.3.4 the *Owner* violates the requirements of this *Contract* to a substantial degree, and the *Consultant* gives a written statement to the *Owner* and the *Contractor* that provides details of such violation and confirms to the *Contractor* and the *Owner* that sufficient cause exists to justify the *Contractor's* action.”

3.34.3 Amend paragraph 7.2.4 by deleting “5” in the second line and replacing it with “10”.

3.34.4 Delete paragraph 7.2.5 and replace it with the following:

“7.2.5 If the default cannot be corrected within the 10 *Working Days* specified in paragraph 7.2.4, the *Owner* shall be deemed to have cured the default if it:

- .1 commences the correction of the default within the specified time; and
- .2 provides the *Contractor* with a reasonable schedule for such correction; and
- .3 completes the correction in accordance with such schedule.

7.2.6 If the *Contractor* terminates the *Contract* under the conditions described in this GC 7.2, the *Contractor* shall ensure the *Work* and the *Place of the Work* are left in a safe and secure condition as required by authorities having jurisdiction and the *Contract Documents*, and shall be entitled to be paid for all *Work* performed to the date of termination together with the costs directly flowing from and which are a reasonable consequence of the termination, but excluding all *Unrecoverable Costs*. The *Owner* shall not be liable to the *Contractor* for any other claims, costs or damages whatsoever arising from such termination of the *Contract*.”

SC 3.35 GC 9.1 PROTECTION OF WORK AND PROPERTY

3.35.1 Amend paragraph 9.1.1.1 by adding the following to the end:

“which the *Contractor* could not reasonably have discovered applying the degree of care and skill described in this *Contract*,”

3.35.2 Amend paragraph 9.1.2 by deleting the words “reasonably apparent in” from the second line and replacing them with “reasonably discoverable from”.

3.35.3 Add a new paragraph 9.1.5 as follows:

“9.1.5 Without in any way limiting the *Contractor's* obligations under this GC 9.1, should the *Contractor* or any *Subcontractor* or *Supplier* cause loss or damage to property, including roads, buildings, structures, paving, grass, sod, trees or other plantings, whether owned by the *Owner* or others, and whether at the *Place of the Work* or adjoining it, the *Contractor* shall be liable for the cost of making good such damage and for the repair and any replacement cost of the grass, sod, trees or other plantings damaged, including the cost of any arborist or other consultant, and such costs may be deducted by the *Owner* from amounts otherwise owing to the *Contractor*. If there is no amount owing by the *Owner* to the *Contractor* at that time, then the *Contractor* shall reimburse the *Owner* for all of the said costs.”

SC 3.36 GC 9.2 TOXIC AND HAZARDOUS SUBSTANCES

3.36.1 Amend paragraph 9.2.3 by deleting the words “The *Owner*” in the first line and replacing them with “The *Contractor*”.

3.36.2 Amend paragraph 9.2.4 by deleting the words “Unless the *Contract* expressly provides otherwise, the *Owner*” in the first line and replacing them with “The *Contractor*”.

3.36.3 Add new paragraphs 9.2.5.5 and 9.2.5.6 as follows:

- "9.2.5.5 take all reasonable steps necessary to mitigate or stabilize any conditions resulting from encountering toxic or hazardous substances, and
- 9.2.5.6 take all necessary steps to mitigate the impact on *Contract Time* and *Contract Price*."

3.36.4 Amend paragraph 9.2.7.3 by adding the words ", but excluding all *Unrecoverable Costs*" after the words "as a result of the delay" at the end of the second line.

3.36.5 Amend paragraph 9.2.8 by adding the following after the word "responsible," in the second line:

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

3.36.6 Add new paragraphs 9.2.10 and 9.2.11 as follows:

- "9.2.10 The *Contractor* shall, immediately upon becoming aware of any environmentally toxic and hazardous substance or materials (within the meaning of applicable environmental legislation), notify the *Owner* in writing setting out particulars concerning the type of the environmentally toxic and hazardous substance or materials, where it was discovered, and all other information that the *Contractor* has at the time of the notice.
- 9.2.11 The *Contractor* shall indemnify the *Owner* and its manager, officers, directors, employees, agents and elected officials in respect of any loss, costs, expense or fine which might be imposed in respect of any failure by the *Contractor* to satisfy its obligations under this GC 9.2 and, without limiting the general nature of this indemnity, the *Contractor* shall indemnify the *Owner* and its manager, officers, directors, employees, agents and elected officials in respect of any loss, costs, expense or fine if the *Project* is made subject to an order from a court or government agency requiring remediation of any contamination caused as a result of the *Work* performed by the *Contractor* or its *Subcontractors* or *Suppliers*."

SC 3.37 GC 9.4 CONSTRUCTION SAFETY

3.37.1 Delete paragraph 9.4.5.

3.37.2 Add new paragraphs 9.4.6 to 9.4.9 as follows:

- "9.4.6 The *Contractor* represents and warrants that it is an experienced contractor and has extensive experience and expertise with respect to compliance with the requirements and obligations of the *OHSA* in performing the *Work*, and acknowledges that the *Owner* relied on such representation and warranty in selecting the *Contractor* to perform the *Work* and in entering into this *Contract*.
- 9.4.7 Without limiting the generality of paragraph 9.4.1, the *Contractor* shall be and shall assume all of the responsibilities of the "constructor" under *OHSA* for the *Project* and shall file the "Notice of Project" with the appropriate government agency naming the *Contractor* as the "constructor" for the *Project*.
- 9.4.8 The *Contractor* shall be solely and exclusively responsible for controlling the workplace and the *Place of the Work* and shall take all steps to effectively direct and supervise the *Work* in order to ensure conformity and compliance with *OHSA* and all other applicable construction health and safety requirements, regulations, industry standards and guidelines, including COVID-19 protocols for construction sites and any applicable *Owner* handbooks, guides, protocols or requirements. The *Contractor* represents and warrants to the *Owner* that appropriate health and construction safety instruction and training have been provided and will be provided to the *Contractor's* employees, *Subcontractors*, *Suppliers* and all others attending at the *Place of the Work*, including the *Owner's* representatives, the *Owner's* own forces, and *Other Contractors*. No comments, suggestions or instructions from the *Owner*, the *Consultant* or any other representative of the *Owner* are to be relied upon or assumed to reduce or replace the

Contractor's designation as the "constructor" or its responsibility for construction safety on the *Project*.

- 9.4.9 The *Contractor* shall indemnify and save harmless the *Owner* and its manager, officers, directors, employees, agents and elected officials, as well as the *Owner's* consultants, successors and assigns, from and against any and all liability, costs, expenses, charges, fines, damages and all other consequences arising from any and all safety infractions on the *Project*, including the payment of legal fees and disbursements on a full indemnity basis."

SC 3.38 GC 9.5 MOULD

- 3.38.1 Amend paragraph 9.5.2.3 by adding the words "and for any delay" immediately before the comma near the end.
- 3.38.2 Amend paragraph 9.5.3.3 by adding the words ", but excluding all *Unrecoverable Costs*" after the words "as a result of the delay".

SC 3.39 GC 10.1 TAXES AND DUTIES

- 3.39.1 Amend paragraph 10.1.2 by adding the following to the end:

"For greater certainty, the *Contractor* shall not be entitled to any mark-up for overhead or profit on any increase in such taxes and duties."

- 3.39.2 Add new paragraphs 10.1.3 to 10.1.6 as follows:

- "10.1.3 If the *Owner* is entitled to an exemption or a recovery of sales taxes, customs duties, excise taxes or *Value Added Taxes* applicable to the *Contract*, the *Contractor* shall, at the request of the *Owner*, 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 *Owner*. The *Contractor* agrees to endorse over to the *Owner* any cheques received from the federal or provincial governments, or any other taxing authority, as may be required to give effect to this paragraph.
- 10.1.4 The *Contractor* shall maintain accurate records of equipment, material and component costs reflecting the sales taxes, customs duties, excise taxes and *Value Added Taxes* paid.
- 10.1.5 Any refund of taxes including, without limitation, any government sales tax, customs duty, excise tax or *Value Added Tax*, whether or not paid, which is found to be inapplicable or for which exemption may be obtained, is the sole and exclusive property of the *Owner*. The *Contractor* agrees to cooperate with the *Owner* and to cause all *Subcontractors* and *Suppliers* to cooperate with the *Owner* in the application for any refund of any taxes, which cooperation shall include, but not be limited to, making or concurring in the making of an application for any such refund or exemption and providing to the *Owner* copies, or where required, originals of records, invoices, purchase orders and other documentation necessary to support such applications or exemptions or refunds. All such refunds shall either be paid to the *Owner* or shall be a credit to the *Owner* against the *Contract Price*, in the *Owner's* discretion.
- 10.1.6 Customs duties and penalties or any other penalty, fine or assessment levied against the *Contractor* shall not be treated as a tax or customs duty for purposes of this GC 10.1."

SC 3.40 GC 10.2 LAWS, NOTICES, PERMITS, AND FEES

- 3.40.1 Amend paragraph 10.2.4 by adding the following to the end:

"and shall be present at each site inspection by an inspector or registered code agency."

- 3.40.2 Amend paragraph 10.2.5 by deleting "The" at the beginning and replacing it with the words "Subject to paragraph 1.1.12 of GC 1.1 – CONTRACT DOCUMENTS, the".

- 3.40.3 Amend paragraph 10.2.6 as follows:

- (a) delete the words "performs work knowing it to be" and replace them with "performs work when it knew or ought to have known that such work is"; and

- (b) delete the words “bear the” in the third line and replace them with “indemnify and save the *Owner* harmless against all”.

3.40.4 Amend paragraph 10.2.7 by adding the following to the end:

“, provided that any claims arising from any delays due to such changes will be dealt with in accordance with GC 6.5 – DELAYS.”

SC 3.41 GC 11.1 INSURANCE

3.41.1 Delete GC 11.1 in its entirety and replace it with the following:

“GC 11.1 INSURANCE

11.1.1 The *Contractor* shall obtain, maintain, pay for and provide to the *Owner* evidence of the insurance coverage required under this *Contract*. Any deductible and/or self-insured retention are the responsibility of the *Contractor* and shall not constitute a *Project* expense chargeable back to the *Owner* in any way.

.1 Commercial General Liability Insurance

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*, as set out in the certificate of *Ready-for-Takeover*, on an ongoing basis for a period of 6 years following *Ready-for-Takeover*.

Commercial General Liability, underwritten by an insurer licensed to conduct business in the Province of Ontario, for a limit of not less than \$5,000,000 per occurrence, an aggregate limit of not less than \$10,000,000, within any policy year with respect to completed operations and a deductible of not more than \$50,000. The insurance coverage shall not be less than the insurance provided by IBC Form 2100 and IBC Form 2320. The policy shall include an extension for a standard provincial and territorial form of non-owned automobile liability policy. This policy shall include but not be limited to:

- .1 Name the *Owner* as an additional insured;
- .2 Cross-liability and severability of interest;
- .3 Blanket Contractual;
- .4 Products and Completed Operations;
- .5 Premises and Operations Liability;
- .6 Personal Injury Liability;
- .7 Contingent Employers Liability;
- .8 Work performed on Behalf of the Named Insured by Sub-Contractors.10
Firefighting Expenses;
- .11 Elevator and Hoist Liability;
- .12 Attached Machinery – while loading and unloading

The following also applies:

- a) If applicable to the *Project*, coverage shall include shoring, blasting, excavation, underpinning, demolition, pile driving, caisson work and work below ground surface including tunneling and grading.
- b) If the *Work* involves asbestos removal, the policy shall provide coverage for this exposure.
- c) If the *Work* involves the use or operation of an owned or non-owned manned aircraft or watercraft, the policy shall provide coverage for this exposure.
- d) To achieve the desired limits, umbrella or excess liability insurance may be used.
- e) The *Owner* reserves the right to request in addition to Commercial General Liability Insurance coverage Wrap-up Liability. The Wrap-up shall be in the names of the *Owner*, *Contractor*, all *Subcontractors*, the *Consultant* and all other architects, engineers, consultants, planners and project managers. Limits and coverages shall comply with the requirements outlined above.

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.2 Automobile Insurance

Standard Form Automobile Liability Insurance that complies with all requirements of the current legislation of the Province of Ontario, having an inclusive limit of not less than \$5,000,000 per occurrence for third party liability, in respect of the use or operation of vehicles owned, operated or leased by the *Contractor*.

.3 Builders Risk Insurance

Broad Form Builders' Risk Insurance written in the joint names of the *Contractor*, *Owner*, *Subcontractors*, and underwritten by an insurer licensed to conduct business in the Province of Ontario. The policy shall have limits of not less than 1.1 times the *Contract Price*. Should the *Owner* provide any property to be incorporated into the *Project*, the policy must be endorsed to include the *Owner's* property. Coverage shall be maintained during the term of the *Contract* and until 10 calendar days after the date of *Ready-for-Takeover*.

The Builders' Risk policy shall:

- .1 Be endorsed to grant permission to occupy prior to the completion or acceptance of the entire *Work*.
- .2 Not be less than the insurance coverage provided by IBC Forms 4042 and 4047 or their equivalent replacement.
- .3 Include the installation, testing, commissioning and subsequent use of any machinery and equipment including boilers, pressure vessels or vessels under vacuum.
- .4 Apply to all *Products*, labour, equipment and supplies of every nature, the property of the *Owner* or *Contractor* or for which the *Owner* or *Contractor* may have assumed responsibility (whether on site or in transit), that is to be used in or pertaining to site preparation, erection, fabrication, construction or reconstruction of the structure.
- .5 Be subject to a waiver of coinsurance.
- .6 Include coverage for materials while in transit, awaiting installation or stored at off-site locations. Coverage shall be in an amount equal to the value of the material.
- .7 Provide that in the case of a loss or damage payment shall be made to the *Owner* and the *Contractor* as their respective interests may appear. The *Contractor* shall act on behalf of the *Owner* for the purpose of adjusting the amount of such loss or damage payment with the insurer. 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 a reasonable extension of *Contract Time*.

.4 Boiler and Machinery Insurance

The Boiler and Machinery Policy shall be written in the joint names of the *Contractor*, *Owner* and *Subcontractors* and underwritten by an insurer licensed to conduct business in the Province of Ontario. The policy limit shall equal the replacement value of all permanent or temporary boilers and pressure vessels and other insurable objects forming part of the *Work*. The *Contractor* may elect to carry the testing, commissioning and subsequent use of these objects under the Boiler and Machinery Policy.

.5 Contractor's Equipment Floater

The *Contractor* shall provide and maintain coverage for all equipment used on the *Project* during the term of this *Contract*. Coverage will be provided, on a broad form basis, for construction machinery, equipment, tools and stock that will be used by the *Contractor* in the performance of the *Work*. The coverage will also include rental expense. Coverage is to be carried from the date of commencement of the *Work* until one year after the date of *Ready-for-Takeover*.

.6 Contractor's Pollution Liability

The *Contractor* shall carry a Contractor's Pollution Liability Policy, underwritten by an insurer licensed to conduct business in the Province of Ontario for a limit of not less than \$2,000,000. Coverage shall include bodily injury, property damage, clean-up and remediation costs.

.7 All Risk Property Installation Floater

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All Risk Property Installation Floater in the joint names of the City, Contractor and subcontractors. The policy shall have limits of not less than 1.1 times the value of the Work. Should the City provide any property to be incorporated into the Work, the policy must be endorsed to include the City's property. Coverage shall be maintained during the term of this Agreement and until ten (10) days after the date of the completion of the Work.

The Property Installation Floater shall:

- a) Include the loading, unloading, transportation, storage, installation, testing, inspecting and commissioning and subsequent use of any materials, supplies, equipment and machinery including boilers, pressure vessels or vessels under vacuum;
- b) Be subject to a waiver of coinsurance;
- c) Not be subject to a deductible clause; and
- d) Provide that in the case of a loss or damage, payment shall be made to the City, Contractor and subcontractors as their respective interests may appear. The Contractor shall act on behalf of the City for the purposes of adjusting the amount of such loss or damage. 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 this Agreement, except that the Contractor shall be entitled to a reasonable extension to complete the Work.

.8 Wrap-up Liability

Wrap-up Liability, underwritten by an insurer licensed to conduct business in the Province of Ontario, for a limit of not less than \$5,000,000 per occurrence, an aggregate limit of not less than \$10,000,000, within any policy year with respect to completed operations. The Wrap-up shall be in the joint names of the Owner, Contractor, all Sub-contractors, Architects, Engineers, Consultants and Project Managers. The insurance coverage shall not be less than the insurance provided by IBC Form 2100 and IBC Form 2320. The policy shall include an extension for a standard provincial and territorial form of non-owned automobile liability policy. This policy shall include but not be limited to:

- (a) Name the *Owner* as additional insured
- (b) Cross-liability and severability of interest
- (c) Blanket Contractual
- (d) Products and Completed Operations
- (e) Premises and Operations Liability
- (f) Personal Injury Liability
- (g) Contingent Employers Liability
- (h) Work performed on Behalf of the Named Insured by Sub-Contractors
- (j) Firefighting Expenses
- (k) Elevator and Hoist Liability
- (l) Attached Machinery – while loading and unloading

The following may apply:

- a) If applicable to the construction project described in the Agreement, coverage shall include shoring, blasting, excavation, underpinning, demolition, pile driving, caisson work and work below ground surface including tunneling and grading.

.9 Asbestos Abatement/Environmental Impairment Liability Insurance

(a) Contractor, or Subcontractor when applicable, shall provide Asbestos Abatement/Environmental Impairment Liability insurance with limits of no less than \$2,000,000 per occurrence. Such insurance shall include all operations associated with hazardous materials removal. If the policy is written on claims made basis, the contractor shall provide the municipality with proof of renewal for the next 5 years. Should the contractor cancel the policy, within that time period, the contractor must provide the municipality with 60 days' notice of cancellation. The municipality may require the contractor to purchase an Extended Reporting Endorsement at the contractor's sole expense.

(b) Asbestos abatement coverage may alternatively be provided under the General Liability insurance as specified provided the policy is specifically endorsed to provide this coverage

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and the limit of liability is in an amount not less than \$2,000,000 inclusive per occurrence. A copy of the endorsement or a letter from the insurer verifying coverage is to accompany the Certificate of Insurance.

.10 Proof of Insurance

- .1 The *Contractor* shall provide the *Owner* with an executed certificate of insurance and a renewal replacement as may be necessary, stating any pertinent exclusions as applicable contained in the policies which may affect coverage as outlined in this *Contract*. The certificate will be delivered prior to the commencement by the *Contractor* of the *Work* or upon renewal of the policy. The *Contractor's* insurance carriers and the insurance policy provisions must be acceptable to the *Owner*. All lines of coverage required by this *Contract* must be shown on the certificate of insurance. The *Contractor* will make available complete certified copies of all applicable insurance policies for examination if required by the *Owner*.
- .2 The *Contractor* shall ensure that each *Subcontractor* requires adequate insurance in accordance with the work being performed under the terms of their engagement. It is the *Contractor's* responsibility to ensure this exposure is insured adequately and at no time will costs associated with this exposure be transferred to the *Owner*.
- .3 Delivery to and examination or approval by the *Owner* of any certificates of insurance or policies of insurance or other evidence of insurance shall not relieve the *Contractor* of any of its indemnification or insurance obligations under this *Contract*. The *Owner* shall be under no duty to either ascertain the existence of or to examine such certificate of insurance or policies of insurance or to advise the *Contractor* in the event that such insurance coverage is not in compliance with the requirements set out in this *Contract*. The *Contractor* is responsible for ensuring such compliance.
- .4 All policies of insurance shall:
 - .1 Be recorded as being a primary policy and shall be in a form and issued by an insurance company satisfactory to the *Owner* and that is licensed to carry on business in Ontario;
 - .2 Be maintained continuously during the course of the *Work* or for such period of time as may be required after completion of the *Work* as may be deemed necessary by the *Owner*;
 - .3 The *Contractor* shall ensure that any self-insured and deductible limits are prudent and responsible for the type of work being undertaken under the *Contract*. Any and all claim costs are borne by the *Contractor* including, but not limited to, deductibles, adjusting fees, legal costs, disbursements, and settlements;
 - .4 Ensure that, except in the case of automobile liability insurance, non-owned automobile liability insurance, the *Owner* is to be added to the policy as an additional insured and/or loss payee;
 - .5 Contain a cross-liability and severability of interest provisions, as may be applicable;
 - .6 Provide that at least thirty (30) days prior written notice, fifteen (15) days in the case of automobile liability insurance, and ten (10) days in the event of non-payment of premiums, shall be given to the *Owner* by the insurer before the insurer or the *Contractor* takes any steps to cancel, terminate, fail to renew, amend or otherwise change or modify the insurance or any part thereof.
 - .7 Necessary notification to insurers is required to ensure continuous coverage is in place at all times. This will include, but is not limited to, transfer of coverage from one policy to another (i.e. completion of a building constructed under a Builder's Risk Policy being transferred to a Property policy once *Ready-for-Takeover* has been attained)."

SC 3.42 GC 12.1 READY-FOR-TAKEOVER

3.42.1 Delete paragraphs 12.1.1.4 and 12.1.1.5 and replace them with the following:

“12.1.1.4 The delivery to the *Owner* of guarantees, warranties, certificates, testing and balancing reports and spare parts, distribution system diagrams, *Shop Drawings*, maintenance and operating manuals, instructions, samples, existing reports and correspondence from authorities having jurisdiction, and all other close-out materials or documents specified in the *Contract Documents*.

12.1.1.5 The delivery to the *Owner* of the *As-Built Drawings* acceptable to the *Consultant* showing the *Work* completed to date.”

3.42.2 Delete paragraph 12.1.2 and replace it with the following:

“12.1.2 If any of the prerequisites set forth in paragraphs 12.1.1.3 to 12.1.1.6 are deferred by agreement between the *Owner* and the *Contractor*, *Ready-for-Takeover* shall not be delayed. To be effective, such agreement shall be in writing and shall be signed by both parties.”

3.42.3 Amend paragraph 12.1.5 by adding the following to the end:

“, which shall be no later than thirty (30) days after *Ready-for-Takeover*.”

3.42.4 Delete paragraph 12.1.6.

SC 3.43 GC 12.2 EARLY OCCUPANCY BY THE OWNER

3.43.1 Delete paragraphs 12.2.1 through 12.2.4 and replace them with the following:

“12.2.1 The *Owner*, its agents, and *Other Contractors* shall have the right to enter, occupy, take possession of and/or use for any intended purpose any portion or all of the undelivered portion of the *Project*, even though *Ready-for-Takeover* may not have been attained, provided that such entry, occupation, taking of possession or use will not interfere, in any material way, with the progress of the *Work*. The entry, occupation, taking of possession or use of any such portion of the *Project* or *Work* shall not be deemed to be the *Owner's* acknowledgement or acceptance of the *Work* or the *Project*, nor shall it be deemed to be an acknowledgment or acceptance by the *Owner* that such *Work*, or portions of the *Work*, have met the *Ready-for-Takeover* requirements, nor shall it entitle the *Contractor* to an adjustment to the *Contract Time* or *Contract Price*.

12.2.2 The *Contractor* shall, as directed by the *Consultant*, give priority to certain parts of the *Work* and bring such parts to a “ready for use” status. Such instructions may require installation of temporary stairs and exits and temporary services, all of which shall be provided and subsequently removed.

12.2.3 The *Contractor* shall maintain full access to the *Work* for the *Owner's* use, as required. The *Contractor* shall maintain or restore heat and power to areas when necessary or as scheduled and keep existing utilities and services functional.

12.2.4 The entry, occupation, taking of possession or use of any portion of the *Project* by the *Owner*, its agents or *Other Contractors* pursuant to this GC 12.2 – EARLY OCCUPANCY BY THE OWNER shall not relieve the *Contractor* of any of its obligations under the *Contract*, including the *Contractor's* designation and obligations as “constructor” under OHSA and the *Contractor's* obligations respecting construction health and safety, and all of the *Contractor's* other obligations, rules, regulations and practices shall continue to apply notwithstanding such entry, occupation, taking of possession or use.”

SC 3.44 GC 12.3 WARRANTY

3.44.1 Amend paragraph 12.3.1 by adding the following to the end:

“Notwithstanding the foregoing, if an item of *Work* is not completed at *Ready-for-Takeover*, except for extended warranties as described in paragraph 12.3.6, the warranty period for such item of *Work* shall be one year from the date that such item of *Work* has been completed and accepted in writing by the *Owner*.”

3.44.2 Amend paragraph 12.3.2 by adding the following to the end:

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"If the *Contractor* has been permitted to make use of permanent equipment or systems, as provided in GC 3.12 – CONTRACTOR'S USE OF PERMANENT EQUIPMENT OR SYSTEMS, such permanent equipment or systems shall be subject to the same warranty as described in this GC 12.3 and shall be judged, for purposes of assessing compliance with the warranty, as though the equipment or systems were new, clean and unused by the *Contractor*, except for normal commissioning and start-up activities."

3.44.3 Amend paragraph 12.3.4 by adding the following to the end:

"The *Contractor* shall perform all remedial and warranty work at its own cost and expense and at a time convenient to the *Owner*, which may be outside of normal working hours. Before performing the remedial and warranty work the *Contractor* shall provide, for the *Owner's* review and approval, a proposed schedule for the performance of such work. Except for any extended warranties provided for in the *Contract Documents*, the warranty period for any corrective work performed by the *Contractor* pursuant to GC 12.3 – WARRANTY shall commence on the date that such corrective *Work* was completed."

3.44.4 Add new paragraphs 12.3.5A and 12.3.5B immediately after paragraph 12.3.5 as follows:

"12.3.5A If the *Contractor* fails to perform the remedial and warranty work and/or fails to correct the defects, deficiencies or items of non-compliant *Work* or is not diligently working towards completion of the same to the satisfaction of the *Consultant*, or if the *Contractor* fails to correct or pay for damage resulting from corrections made, as required in paragraph 12.3.5, the *Owner* may engage others to perform the work necessary to complete the remedial and warranty work and to correct the outstanding defects, deficiencies or items of non-compliant *Work* and to correct damage resulting from corrections made, all at the risk and cost of the *Contractor*, and the *Owner* may deduct all costs and may pay for all damages incurred from the *Deficiency Rectification Security*. If the costs and damages incurred by the *Owner* exceed the amount of the *Deficiency Rectification Security*, the *Contractor* shall reimburse the *Owner* for all excess costs and damages. The *Owner's* rights under this paragraph are in addition to any other rights the *Owner* may have pursuant to the *Contract* and/or at law.

12.3.5B Provided that the *Contractor* has completed all outstanding remedial and warranty work and has corrected all defects and deficiencies and has completed all items of non-compliant *Work* and has corrected or paid for all damage resulting from corrections made, all to the satisfaction of the *Consultant*, the *Owner* shall return to the *Contractor* the remaining balance of the *Deficiency Rectification Security*, if any, without interest, thirty (30) days after the date that is the later of (a) the date of total completion of the *Contract*, and (b) the date on which the warranty period ends."

SC 3.45 GC 13.1 INDEMNIFICATION

3.45.1 Delete GC 13.1 and replace it with the following:

"13.1.1 The *Contractor* shall indemnify and shall defend and save harmless the *Owner*, its manager, officers, directors, agents, representatives, elected officials, successors, and employees harmless from and against any claims, causes of action, demands, losses, charges, fees, duties, accounts, fines, penalties, expenses and costs (including legal costs on a solicitor and client basis), or other proceedings of every kind or nature whatsoever at law or in equity brought against, suffered by, or imposed on the reason of,

- .1 the *Contractor* carrying out or failing to carry out any obligation to which it is subject including the performance of the *Work*, or exercising any right to which it is entitled, under the *Contract* except to the extent that the same are caused by the negligence or deliberate wrong-doing of the *Owner* or other person entitled to indemnification under this section, or
- .2 any patent, trademark, copyright infringement or other breach of any intellectual property right of any person, for which the *Contractor* or any *Subcontractor* to the *Contractor* is responsible.

13.1.2 The *Contractor* shall indemnify and hold harmless the *Owner's* agents and employees from and against claims, demands, losses, costs, damages, actions, suits, or proceedings by third parties that arise out of, or are attributable to, the *Contractor's* performance of the *Contract*, provided such claims are attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property, and caused by negligent acts or omissions of the *Contractor* or anyone for whose acts the *Contractor* may be liable, and made in writing within a period of 6 years from the date of *Ready-for-Takeover* as set out in the certificate of *Ready-for-Takeover*,

or within such shorter period as may be prescribed by any limitation statute or the province or territory of the *Place of the Work*.”

SC 3.46 PART 14 – OTHER PROVISIONS

3.46.1 Add a new “PART 14 – OTHER PROVISIONS” as follows:

“PART 14 OTHER PROVISIONS

GC 14.1 LIENS AND ACTIONS

- 14.1.1 The *Contractor* shall save and keep the *Owner* and the *Place of the Work* free from all construction liens and all other liens whatsoever arising out of the *Work*. If any lien is claimed, filed or registered or any written notice of a lien is received by reason of any *Work* supplied or claimed to have been supplied by or through a *Subcontractor* or *Supplier*, the *Contractor* shall, at its own expense, within ten (10) *Working Days* of being notified of the lien or written notice of a lien, secure the discharge, release, vacating or withdrawal of such lien or written notice of a lien by payment or by giving security or in such other manner as is or may be required or permitted by law, failing which the *Owner* may, but shall not be required, take such steps as it, in its absolute discretion, may deem necessary to release, vacate or discharge the lien or written notice of a lien.
- 14.1.2 If a lien action is commenced arising out of a lien described in paragraph 14.1.1, the *Contractor* shall take all reasonable steps to remove the *Owner* from such action and shall indemnify the *Owner* and hold it harmless in such action.
- 14.1.3 All amounts, including legal costs on a full indemnity basis, disbursements, interest, borrowing, premium or other bonding costs and/or charges incurred by the *Owner* in releasing, vacating, discharging and/or otherwise dealing with a *Subcontractor* or *Supplier* lien, written notice of a lien and/or defending or otherwise dealing with a lien action, shall be charged to the *Contractor* and shall be set off and deducted from any amount owing to the *Contractor*. If there is no amount owing by the *Owner* to the *Contractor* at that time, then the *Contractor* shall reimburse the *Owner* for all amounts incurred by the *Owner*.

GC 14.2 OWNERSHIP OF MATERIALS

- 14.2.1 Unless otherwise specified, all materials existing at the *Place of the Work* at the time of execution of this *Contract* shall remain the property of the *Owner*. All *Products* delivered to the *Place of the Work* by the *Contractor* shall be the property of the *Owner* and shall be free of encumbrances. The *Contractor* shall remove all surplus or rejected materials from the *Place of the Work*.

GC 14.3 DAILY REPORTS/DAILY LOGS

- 14.3.1 The *Contractor* shall cause its supervisor, or such competent person as it may delegate, to prepare and maintain a daily site log or diary recording, at least, the following: (a) daily weather conditions and temperatures at the *Place of the Work*, (b) the number of workers of the *Contractor*, *Subcontractors*, *Suppliers* and any other forces at the *Place of the Work*, (c) the *Construction Equipment* at the *Place of the Work*, (d) the descriptions and quantities of *Products* delivered and utilized, and (e) the general nature of *Project* activities. Such log or diary shall also record any extraordinary or emergency events which may occur and also the identities of any persons who visit the *Place of the Work* who are not part of the day-to-day workforce. The *Contractor* shall also take or arrange for the taking of *Project* photographs to record the progress of the *Work*.
- 14.3.2 The *Contractor* shall maintain, either at its head office or at the *Project* site, records recording labour and material resourcing on the *Project*, including the records identified in paragraph 14.3.1 and other records which document the activities of the *Contractor*.
- 14.3.3 Upon request of the *Owner* or the *Consultant*, the *Contractor* shall make available for inspection and copying all of the records generated pursuant to this GC 14.3, along with any other routine *Project* records ordinarily maintained by the *Contractor*.

GC 14.4 ADVERTISING AND PUBLIC STATEMENTS

- 14.4.1 The *Contractor* shall not publish, issue or make any statements or news release, electronic or otherwise, concerning the *Contract*, the *Work*, or the *Project*, and shall not use the *Owner's* name or logo, without the prior express written consent of the *Owner*. For greater certainty, the *Contractor* shall obtain the prior written approval of the *Owner* for any public advertising, written public sales promotions, press release or other general publicity matter, in which the name or

logo of the *Owner* is mentioned or used, or in which words are used from which any connection with the *Owner* may be inferred. The *Contractor* will not erect or permit the erection of any sign or advertising at the *Place of the Work* without the prior written approval of the *Owner*.

GC 14.5 AODA REQUIREMENTS

- 14.5.1 Pursuant to sections 7 and 80.49 of the Integrated Accessibility Standards Regulation, O. Reg. 191/11 (the "**Regulation**") under the *Accessibility for Ontarians with Disabilities Act, 2005* ("**AODA**"), the *Contractor* shall ensure that all of its employees, agents, volunteers, or others for whom it is at law responsible receive training about the provision of the goods and services contemplated herein to persons with disabilities. Such training shall be provided in accordance with sections 7 and 80.49 of the *Regulation* and shall include, without limitation, a review of the purposes of AODA and the requirements of the *Regulation*, as well as instruction regarding all matters set out in sections 7 and 80.49 of the *Regulation*. When requested by the *Owner*, the *Contractor* shall provide written proof that all employees have been trained as required under AODA as well as any documentation regarding training policies, practices and procedures.

GC 14.6 AMENDMENTS TO THE CONTRACT

- 14.6.1 Except for the written or e-mail direction referred to in paragraph 6.1.2 of GC 6.1 – OWNER'S RIGHT TO MAKE CHANGES, no alteration or amendment to this *Contract*, no course of conduct or dealing between the parties, and no express or implied acceptance of alterations or amendments to the *Contract* shall be binding unless it is in writing and signed by each party.
- 14.6.2 No waiver by or on behalf of a party of any breach of a provision of this *Contract* shall be binding upon the party unless it is expressed in writing and duly executed by the party or signed by its fully authorized representative, and such a waiver shall not operate as a waiver of any future breach, whether of a like or different character. No waiver shall be inferred from or implied by the conduct of any party.

GC 14.7 CONTRACT SECURITY

- 14.7.1 The *Contractor* shall deliver to the *Owner* a performance bond and a labour and material payment bond in the forms specified in the *Payment Legislation*, each in the amount of fifty percent (50%) of the *Contract Price* plus *Value Added Taxes*.
- 14.7.2 Such bonds shall be issued by a duly licensed surety company authorized to transact the business of suretyship in Ontario and shall be maintained in good standing until the fulfillment of the *Contract*. All premiums and other costs of the bonds are included in the *Contract Price*.

GC 14.8 TIME IS OF THE ESSENCE

- 14.8.1 The *Contractor* represents and warrants that it will attain *Ready-for-Takeover* by the date stipulated in paragraph 1.3 of Article A-1 of the Agreement – THE WORK, as such date may be adjusted in accordance with this *Contract*, and agrees that time shall be of the essence in the performance of the *Contractor's* obligations under this *Contract*."

[Schedule of Key Personnel follows]



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SCHEDULE – KEY PERSONNEL

The following are the *Key Personnel* assigned to the *Project*:

Name and Position	Employed By

The *Contractor* represents that the *Key Personnel* will be assigned to and will be dedicated to the *Project* on a full-time basis unless noted otherwise.

APPENDIX B – RFQ PARTICULARS

A. THE DELIVERABLES

The City is seeking a qualified contractor to complete the construction of the maintenance building at the Walter Gretzky Golf Course (WGGC) as further described herein.

B. MATERIAL DISCLOSURES

- Designated Substance Report, as prepared by Jaggers Him Limited, dated April 2009.
- Facilities Accessibility Design Standards, as prepared by the City of Brantford, dated November 2009.
- CoB Facility Physical Security Standards, as prepared by the City of Brantford, dated March 2024.
- CoB Network Cabling Specifications, as prepared by the City of Brantford, dated November 2018.
- Geotechnical Engineering Report – Storage Building, as prepared by Englobe, dated August 26, 2022.
- Geotechnical Investigation Report – Cart Storage, as prepared by Englobe, dated August 26, 2022.
- Functional Servicing Brief, as prepared by G. Douglas Vallee Ltd., dated January 2026.

C. MANDATORY SUBMISSION REQUIREMENTS

1. Submission Form & Schedule of Prices

Each quotation must be submitted through the City's electronic Bidding System.

2. Other Mandatory Submission Requirements

- (a) Workplace Injury Summary Report (WISR) from WSIB from within the last 90 days.

D. MANDATORY TECHNICAL REQUIREMENTS

N/A

E. PRE-CONDITIONS OF AWARD

The selected respondent must satisfy the following conditions and provide the following information:

- A digital Labour & Material Payment e-bond provided on *Construction Act of Ontario (Form 31)* in an amount equal to 50% of the value of the contract price, inclusive of value added taxes;
- A digital Performance e-bond provided on *Construction Act of Ontario (Form 32)* in an amount equal to 50% of the value of the contract price, inclusive of value added taxes;
- Certificate of Insurance for the coverage and limits as set out in the agreement, naming The Corporation of the City of Brantford as additionally insured;
- WSIB clearance certificate confirming the Contractor is registered and has an account in good standing;
- Health and Safety Plan, which includes procedures on how the Contractor intends to address and handle any hazardous substance encountered in the project limits, if applicable; and
- Notice of Project to the Ontario Ministry of Labour.

SCOPE OF SERVICES

1. PROJECT IDENTIFICATION

- 1.1 The work described within the Scope of Services relates to the official project (“the Project”) known as Walter Gretzky Golf Course (WGGC) Maintenance Building.
- 1.2 The project is located at 320 Balmoral Ave, Brantford, herein also referred to as the “project site”. The project site is owned and managed by the Corporation of the City of Brantford, hereinafter also referred to as “the Owner”.

2. SCOPE OF SERVICES OVERVIEW

- 2.1. Located in the northwest of Brantford, the WGGC Maintenance Building involves the demolition of the existing Quonset hut (maintenance building) and construction of a new maintenance building and yard area. The goal for the new facility is to improve the visitors’ first impression of the Golf Course with the design of an aesthetically pleasing facility that operates efficiently and has a neat and tidy appearance.
- 2.2. The new 5,250 square foot building will include indoor storage space for mowers, tractors and golf course maintenance equipment, a mechanics garage/workshop space for equipment maintenance activities, a storage space for supplies and staff area with lunchroom, greens keeper’s office, washroom, locker space, and shower.
- 2.3. The maintenance yard and building are set immediately south of the entrance and parking lot. The yard space will contain bulk material storage areas, fuel tank fill up area, chemical storage, chemical fill up pad, and wash pad. An exterior cart storage area for 30 carts is to be constructed beside the existing pro shop, and the interior walls of the pro shop garage are to be removed to accommodate and additional interior storage space for 30 carts. Cart storage areas are to be designed to accommodate future charging of electric carts.
- 2.4. City staff will conduct normal golf course maintenance yard activities within this facility. The equipment storage area design shall feature an open plan to promote flexibility in storage requirements. Garage doors at opposite ends of the building shall allow for equipment to move through the building, limiting the need to reverse equipment.

2.5. Provisional Prices:

- 2.5.1. Concrete Pad for Cart Parking – as per Servicing Plan drawing C101 and specifications Division 3 – Concrete. Supply and install concrete pad for cart parking.
- 2.5.2. Windows W2a as per drawings A201 & A300 and per window schedule as well as Section 08556 – Vinyl & Fibreglass Windows of the specifications.
- 2.5.3. Stone Veneer – cost to supply and install stone veneer at the base of the new maintenance building. See drawings as listed below in Section 9 - “List of Specifications and Drawings” below.

2.6. Separate Prices:

- 2.6.1. Gravel for Cart Parking - in lieu of concrete pad (provisional), supply and install gravel pad for cart parking and re-locate existing concrete barriers beside existing Quonset Hut that are currently being used for cart parking.
- 2.6.2. Asphalt Shingles in lieu of Pre-Finished Painted Metal roof – as per drawing A003 and Section 07300 – Asphalt Shingles of the specifications.

3. ADDITIONAL DETAILS OF THE PROJECT

- 3.1 Demolition of the existing Quonset Hut is not to commence until the new maintenance building is completed.
- 3.2 Site plan approval and Building Permit have both been initiated and will be available to the Contractor at commencement of the project.
- 3.3 The City intends to maintain operations throughout construction. Construction can commence and continue on site; however, at a reduced capacity during September and any other times deemed necessary by golf operations. The Contractor and Consultant will work with the City to plan phases of construction to accommodate site operation schedules and events, where necessary.
- 3.4 All trenching or other works that may cause disruption to golf operations will not be permitted until after September 2026.
- 3.5 Contractor may use existing old parking lot for lay down area as shown in Section 9 - “List of Specifications and Drawings” below. Exact location to be determined and approved on site by the City.

4. GENERAL REQUIREMENTS

- 4.1 The Contractor is required to provide materials, labor, equipment and incidentals as necessary to complete the work described herein.
- 4.2 Cost for any health and safety requirements, including signage and protection shall be included in the contract price.
- 4.3 Contractor shall work with the City to ensure on-time completion and a high standard of professionalism is maintained to meet all relevant standards and warranty requirements.
- 4.4 Contractor shall verify field measurements to ensure that the proposed work described will be suitable for the existing site conditions and give recommendations for optimal installation and operation of such equipment.
- 4.5 Contractor shall include any necessary site or product modifications and adaptations to ensure a fully functioning turnkey system.
- 4.6 Contractor shall take immediate and necessary action to stop work and rectify any workmanship and materials that fail to meet the requirements identified within the Scope of Services.
- 4.7 Contractor shall provide prompt and reasonable response to all inquiries or complaints made via emails or phone call made by the City Project representative regarding the construction. In any event a response shall be made within 24 hours of initial report made by the City.
- 4.8 The Contractor is responsible for all utility and private locates prior to commencing work.

4.9 The Contractor shall support the City's policy to encourage and promote the 3-R's of material and energy consumption (reduce, reuse and recycle). The Contractor shall adhere to these same principles which includes but not limited to the following:

- i. The work specified herein that will generate waste and debris and all such materials shall be disposed of at the Contractor's expense at an MOE-approved site in an MOE-approved manner.
- ii. The Contractor shall provide certificates/documentation to confirm that disposal has been undertaken as per the contract. Where requested, such certificates shall be furnished prior to, and as a specific condition of, the City's final payment. Certificates shall state the location and date of the disposal site, that disposal has been completed satisfactorily, and that all applicable fees and permits have been paid.

5. DUTIES AND RESPONSIBILITIES

5.1 City Project Representative

- a) A Project Manager from the City's Facilities Capital Development, Engineering Services Department has been appointed to coordinate the development of the Project. Responsibilities include, but are not limited to:
 - i) Monitoring and exercising control and right of approval over the development of the Project,
 - ii) Deciding on matters of deviation from the Project,
 - iii) Communicating decisions and directions to the Consultant and Contractor,
 - iv) Attending Contractor co-ordination meetings as necessary,
 - v) Monitoring schedule, performance and safety practices,
 - vi) Coordinating access to City property for Work required to complete the Project and liaising with Senior Management, and;
 - vii) Completing progress payments for the Contractor.
- b) All Project correspondence shall be directed through the assigned representative.

6. TENTATIVE PROJECT SCHEDULE

The Project Schedule is intended to provide anticipated completion dates in which the City is working toward. Notwithstanding the foregoing, the City reserves the right to modify the timelines set out below as the City deems necessary.

EVENT	DATE
Project Preconstruction Meeting	May 2026
Shop Drawing Review	June-August 2026

Mobilization to Site – to be approved by golf operations	July/August 2026
Reduced Capacity – to be reviewed with the City	September 2026
Trenching works	October 2026
Ready for Take Over Date	June/July 2027

7. PROTECTION OF WORK AND PROPERTY

- 7.1. The Contractor is responsible for any damage to any surrounding structures and vehicles. Any damage incurred shall be corrected by the Contractor at no additional cost to the City.
- 7.2. All work to be kept on paved / asphalt areas where possible. Should damage occur to any landscaping or sod due to construction, the Contractor shall be solely responsible to repair damage back to pre-construction state.

8. GUARANTEE & WARRANTY

- 8.1 Notwithstanding any warranties that may exist under law and/or as may be provided by the manufacturers of the components that are incorporated in the Work, provide a manufacturer's signed certificate warranting materials against any factors detrimental to appearance or performance under normal usage for a period of at least the manufacturers standard material warranty period or as otherwise provided in the specifications.
- 8.2 The Contractor is responsible for expeditious rectification in a manner satisfactory to the City, and for any related costs of any imperfect Work due to or arising from materials, equipment incorporated into or used in the construction, that is discovered by any means at any time during the 2 year period immediately following completion of the Project. The City shall decide as to the nature, extent, cause of, and responsibility for imperfect Work and the necessity for and the method of rectification thereof.

9. LIST OF DRAWINGS & ADDITIONAL PROJECT DOCUMENTS

Drawing/ Report Name	Description
1a. Arch Drawings- (No Stone)	Complete set of Architectural drawings designed by G. DOUGLAS VALLEE LIMITED Issued for Permit & Tender

1b. Civil Drawings	Complete set of Civil drawings designed by G. DOUGLAS VALLEE LIMITED Issued for Permit & Tender
1c. Landscaping Drawings	Complete set of Landscaping drawings designed by G. DOUGLAS VALLEE LIMITED Issued for Permit & Tender
1d. Mechanical Drawings	Complete set of Mechanical drawings designed by G. DOUGLAS VALLEE LIMITED Issued for Permit & Tender
1e. Electrical Drawings	Complete set of Electrical drawings designed by G. DOUGLAS VALLEE LIMITED Issued for Permit & Tender
2. Provisional - Stone Veneer - Drawings	Provisional Price – Stone Veneer. Complete set of project drawings designed by G. DOUGLAS VALLEE LIMITED Issued for Permit
3. Designated Substances Report	Designated Substance Survey for WGGC Maintenance Building, Prepared by Jaggers Him Limited, dated April 2009
4. Facilities Accessibility Design Standards - Brantford	Design Standards applied to all newly constructed and/or renovated City of Brantford owned, leased or operated facilities
5. CoB Facility Physical Security Standards	Security standards for all City of Brantford Facilities
6. CoB Network Cabling Specifications	Data Cabling standards for all City of Brantford Facilities
7. Geotechnical Engineering Report – Storage Building	Geotechnical report on the area for the new maintenance building. Completed by Englobe August 26, 2022
8. Geotechnical Investigation Report – Cart Storage	Geotechnical report on the area included in provisional price #1 & separate price #1 as mentioned above. Completed by Englobe August 26, 2022

9. Functional Servicing Brief	Functional servicing brief prepared by G. Douglas Vallee Ltd. January 2026
10. Contractor Lay Down Area	Site map showing location of approved lay down area during construction. Exact location to be approved by the City
11. Maintenance Building - Finish Schedule	Equipment, fixture, exterior & interior finishes schedule. Prepared by G. Douglas Vallee Ltd. July 2025
12. Eaton Smartrack Network Cabinet	Network cabinet product detail sheet. https://tripplite.eaton.com/smartrack-6u-low-profile-switch-depth-plus-wall-mount-rack-enclosure-cabinet~SRW6UDP
13. Specifications Package	Complete package of specifications prepared by G. Douglas Vallee Ltd. July 2025



vallee

*Consulting Engineers,
Architects & Planners*

BRANTFORD

SPECIFICATIONS

for

**Gretzky Golf Course Maintenance Building
Brantford, Ontario**

for the

City of Brantford

Architect, Structural Engineers, Civil Engineers:

G. DOUGLAS VALLEE LIMITED

2 Talbot Street North
Simcoe, Ontario N3Y 3W4
T: (519) 426-6270

Mechanical Engineers:

ARC ENGINEERING INCORPORATED

1100 South Service Road, Suite 417
Stoney Creek, Ontario L8E 0C5
T: (905) 643-8530

Electrical Engineers:

SEGUIN ENGINEERING INCORPORATED

12 Argyle Street North
Caledonia, Ontario N3W 1B6
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Landscape Architects:

ADESSO DESIGN INC.

69 John Street South
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PART 1 – GENERAL

1.1 REPORTS

1. The attached Designated Substance Survey Report dated April 9, 2009, was prepared for the City of Brantford by Jagger Hims Limited for the existing Club House (since removed), existing Pro-Shop (since removed) and Quonset Hut/ Maintenance Building.
2. Information provided in this report was obtained for the use of the Owner in the execution of the design. It is presented in good faith to assist the Contractors and their sub-trades.
3. It is incumbent upon the Contractor to make whatever additional materials investigation they feel may be required for the proper execution of the Contract at no additional cost to the Owner.

1.2 SCOPE OF WORK

1. The removal of all designated substances noted in the attached report is part of the Base Contract. This work will be done by the Contractor prior to demolition.

1.3 SITE CONDITIONS

1. Examine the conditions on the site, present site conditions.

PART 2 – PRODUCTS

2.1 AWARENESS OF HAZARDOUS MATERIALS

1. Each Contractor shall be constantly aware of the possible discovery of additional unknown hazardous materials. Should the Contractor encounter any hazardous material or suspected hazardous material, the Contractor shall immediately stop work in the area affected and report the condition to the Consultant.
2. If the Contractor encounters any additional unknown hazardous material or suspected hazardous material, the Contractor agrees to immediately initiate the required procedures of the Canadian Environmental Protection Act, 1999, and/or federal or provincial agencies having jurisdiction to protect any and all persons exposed to the affected areas or areas affected thereby.
3. Upon written notification by the Contractor to the Consultant, the Contractor will engage an industrial hygienist to sample and test the suspected hazardous material.
 1. Should the test prove negative, and proper clearance obtained from the industrial hygienist, the work will then proceed.
 2. Should the test prove positive, the work will be put on hold and the Contractor will conduct corrective measures and/or disposal program in accordance with applicable laws and regulations.
4. The work in affected areas shall not be resumed until the Contractor has separately arranged for the hazardous material to be removed or rendered harmless, and the hazardous material is removed or rendered harmless in accordance with all applicable laws and regulations, and has been certified safe by appropriate authorities.

5. Each Contractor and/or Subcontractor shall be responsible to inform all of its employees on the site of the provisions in these paragraphs. Instruct each employee of the job site procedures in reporting any and all suspected materials.
6. Absolutely no material will be allowed on site that does not have a manufacturer's label stating contents.

END OF SECTION

1. **GENERAL**

1. Unless specified otherwise, the following instructions shall apply to all Sections of the Work.
2. Codes and Standards:
 1. Conform to the latest codes and standards including the Ontario Building Code, Canadian Electrical Code, Canadian Safety Code for Elevators. Conform to the Canadian Code for Construction Safety, as currently amended, and to the Construction Safety Act, Ont. as currently amended, and to all other applicable codes and Building By-Laws hereinafter referred to as Codes.
 2. Conform to the requirements of the authorities having jurisdiction, including public utilities, referred to in the Contract Documents as the Authorities.
 3. Conform to regulations of the Municipality having jurisdiction regarding clean up of tracking on streets and protection of sidewalks and curbs, and all other applicable laws, By-laws and Regulations.
 4. Where initials of an organization are used, followed by number or combination of numerals and letters, this designates a standard produced by the organization. Conform to issue of standard so designated, as amended and revised to date of contract. When designation does not indicate particular edition of standard, current edition at date of Contract shall apply.
 5. Wherever a standard confers upon a person, a body politic or a body corporate the right to approve, to select, to exercise authority or to interpret the standard, and refers to that person, body politic or body corporate as the Authority having jurisdiction, the Authority, the Engineer, the Department, the Purchaser, the Contracting Officer (e.g. U.S. Fed. Spec.) or by some other such designation, the Consultant shall have the right to exercise the powers of any such person, body politic, or body corporate.
 6. Where standards and manufacturer's instructions conflict with the Contract Documents, the Contract Documents shall govern.
 7. The Contractor is assumed to have made themselves familiar with and abide by the Federal, Provincial, Municipal and local laws, rules and regulations which in any manner affect those engaged or employed in the Work, or in any way affect the Work, and no plea of misunderstanding will be considered on account of ignorance thereof. If the Contractor shall discover any provisions in the Drawings, Specifications or Contract which are contrary to or inconsistent with any law, rule of regulation, the Contractor shall at once report it to the Consultant in writing.
3. Read General Work - Section 01015, for instructions and requirements regarding General Work and Services.
4. Establish rates of wages, hours and conditions of work, in accordance with Provincial Codes and as generally recognized and accepted in locality. Wherever possible, give preference to use of local labour, building mechanics, suppliers and subcontractors.
5. Definitions:
 1. Wherever the words 'approved', 'satisfactory', 'directed', 'permitted', 'inspected',

'instructed', 'required', 'submit', 'ordered', or similar words or phrases are used in the Contract Documents, it shall be understood, unless the context provides otherwise, that the words 'by (to) the Owner and Consultant' follow.

2. The words 'by others' when used in the Specifications or on the Drawings shall not mean by someone other than the Contractor. The only means by which something shown or specified shall be indicated as not being in the Contract is by the use of the initials 'NIC' or the words 'not in (the) Contract', 'by Client', or 'by another Contractor'.
3. Exposed: means when visible by the occupants at completion of the work, unless scheduled or specified otherwise.
4. The use of scope, related work, or similar articles in the Specifications shall not relieve the Contractor from their responsibility to assign the various parts of the work to the appropriate subcontractors and forces and shall not impose upon the Consultant or Owner the duty to arbitrate disputes between the Contractor and the Subcontractor, nor shall it relieve the subcontractors from their responsibility for carefully examining all the Drawings and Specifications and coordinating their work with each other and the Contractor.

2. SITE

1. The work is to be done at 320 Balmoral Dr, Brantford, ON N3V 1E6.
2. Location of all trailers, storage units, and construction fences by Contractor shall be reviewed and approved by the Owner at a preliminary site meeting prior to the Contractor moving on to site.
3. Parking for construction workers shall be on site as directed by the Owner, only when parking spaces are available.
4. Site access for construction to be confirmed by Owner at first site meeting.

3. PROJECT SCHEDULE

1. The Contractor will be required to forward to the Owner and Consultant a schedule indicating construction sequences, workforce and equipment required in order to complete the work within one (1) week after award of a Letter of Intent. This schedule is to be posted on site at all times. The schedule is to be updated on a bi-weekly basis.
2. When the Consultant deems that the Contractor's work has fallen behind schedule, the Contractor will provide the necessary personnel and work the necessary overtime to bring the Work back on schedule at no cost to the Owner.
3. Contractor shall commence shop drawings immediately once acceptance of Tender has been given by the Owner. A complete shop drawing and sample submission schedule is to be provided within seven (7) days of tender award. This will be reviewed by the Consultant.
4. Commence construction on the Project as per the Tentative Project Schedule listed in section 6 of the Scope of Services and as per direction from the City of Brantford. It is a mandatory requirement that this project (complete scope of work) be substantially complete and ready for the Client's occupancy by **July, 2027**.
5. Work to commence immediately upon award of the Contract, and the Contractor will execute the same without interruption until completion, including the furnishing of all necessary

supplies and equipment for winter operations. Contractor shall assure themselves before submitting a Tender that they are in a position to furnish adequate supplies of all materials, critical or otherwise, at such times necessary to ensure immediate commencement of the Work and continuous operation without delays on the project. The Contractor shall include in their tender amount, sufficient sums for the purchase of critical materials from any source available. After award of the Contract, the Owner will not grant increases to the Tender amount to obtain critical materials at premium prices, nor will delays or interruption of the work be tolerated.

4. **EXAMINATION**

1. The Contractor affirms that before tendering, they did examine the site and ascertain the extent and nature of all conditions affecting the performance of the work including the existing conditions;. The Contractor shall accept sole responsibility for any error or neglect on their part in this respect. Submission of Tender shall be deemed confirmation that the Contractor has inspected site and is thoroughly conversant with existing conditions. No claims for extra payment will be considered for extra work, expense or difficulties encountered due to conditions which were visible upon or reasonably inferable from examination of the said site prior to the closing of tenders.
2. The Contractor affirms that before tendering they did examine and understand the Specifications, Drawings, and other tender documents thoroughly, including those particular items about which questions have been asked and written instructions given. The Contractor shall report any ambiguities, discrepancies, omissions, errors, departures from Building By-Laws, or from good practice, discovered within the tender documents to the Consultant as soon as possible to allow clarification by addenda to be issued to all bidders. No claims for extra payment will be considered for work, expense or difficulties which are reasonably inferable from an examination of the documents prior to the closing of tenders.
3. The drawings and specifications complement each other and neither is to be considered alone. Hence, any item omitted in one, but mentioned or implied in the other, must be provided.
4. Drawings are in part diagrammatic and are intended to convey the scope of work and indicate general and approximate location, arrangement and size of fixtures, equipment, ducts, piping, conduit and outlets. Obtain further information regarding locations, arrangement and sizes, from study and coordination of construction drawings, including architectural, structural, mechanical and electrical and become familiar with conditions and spaces affecting these matters before proceeding with work.
5. Where job conditions require reasonable changes in location and arrangements, make changes at no extra cost to the Owner. Install and arrange ducts, piping, conduit, equipment and fixtures in such a way as to conserve head room and space as much as possible.
6. All changes to the contract documents which result in an extra or a credit to the contract amount are not to be executed until written instructions have been received and the extra or credit agreed to in writing by all parties to the contract.
7. Examine work upon which your work depends. Application of your work or any part of it shall be deemed acceptance of work upon which your work, or that part of it which has been applied, depends.

5. OMISSIONS AND DISCREPANCIES

1. Notify the Consultant at once of discrepancies found in, or omissions from the drawings, specifications or other documents or if in doubt as to their meaning. If a discrepancy exists, the Owner and Consultant will issue an addendum to all Bidders to clarify or correct such discrepancies.
2. Neither Owner nor Consultant will be responsible for any verbal instructions.
3. Should any discrepancies or omissions go unreported to the Owner during tendering period, the proper interpretation shall be at the discretion of the Consultant.

6. UNIT PRICES

1. At time of submission include in the Schedule of Prices all the unit prices.
2. Any work done on the basis of unit prices shall be carried out generally in accordance with the specifications for similar work and shall be to the Consultant's approval.

7. CHANGES TO THE CONTRACT

1. The Contractor is not to act on verbal instruction from the Owner or it's Consultants, on Work they consider to be extra to their contract scope. Extra work can only be authorized by the Owner and Consultant in a written form only. The written form must also include that this Work is an extra to the contract scope, and the method by which extra costs will be tabulated.

8. NON-PAYMENT

1. All those doing work or supplying materials shall notify the Owner and Consultant in writing if the Contractor fails to make payment when due. Failing such notice, the Owner and Consultant will assume that payments have been duly made.

END OF SECTION

1. REFERENCES AND QUALIFICATIONS

1. Work shall be done in accordance with best standard practice, unless special methods or performance standards are specified or given in writing by the Owner. Only skilled mechanics shall be used where such are required to produce a first-rate job. Where required by code or other by-laws and regulations, trades people shall be licensed in their respective trades.
2. Use, install and handle manufactured materials, equipment and appliances in strict accordance with manufacturer's directions and instructions, unless specified otherwise.
3. Any work not acceptable to the Consultant or Owner or Authorities having Jurisdiction shall be removed and replaced when and as directed by them. The cost of re-executing such Work shall be borne by the Contractor.

2. BUILDING AND PREMISES

1. Owner reserves the right to take over any completed portion prior to specified completion date, provided it does not affect completion of remaining work.
2. If Owner is forced to occupy building or parts thereof prior to completion, but after date of Substantial Performance, Contractor shall not be entitled to indemnity for interference with the performance of the Work.

3. DELIVERY AND STORAGE OF MATERIALS

1. Arrange for early deliveries necessary for execution of work without delay and have materials on job well in advance of the time it is needed to avoid construction delays.
2. Deliver, store and handle materials to exclude foreign material and prevent damage, soiling or breakage.
3. Delivery to the job site shall be coordinated by the General Contractor at no additional cost to the Owner.
4. Materials stored on site which need to be protected from weather shall be so protected.
5. Packaged materials shall be delivered in packages with manufacturer's seals and labels intact.
6. Reject material damaged in transit. Store packaged materials in original undamaged containers with manufacturer's labels and seals intact. Handle and store materials in accordance with manufacturers' and suppliers' recommendations. Prevent damage. Remove from site and replace damaged materials, at no additional cost to Owner.
7. Storage of any material on or off the site is the responsibility of the contractor. Only materials delivered on site will be approved to be included in the monthly draws for payment.

4. OWNERSHIP OF MATERIALS

1. All work or material delivered to the site or premises to form part of the works shall be considered the property of the Owner and shall not be removed without the consent of the Owner and Consultant, but the Contractor shall remove the surplus materials after completing the Work. If so directed by the Consultant, such surplus materials shall be removed at any time prior to the completion of the work.

2. All materials slated for removal from the existing site that are not identified for reuse or specifically noted to be turned over to the Owner, shall become the property of the Contractor and shall be removed from the site in an expedient manner.

5. MATERIALS AND EQUIPMENT

1. All materials and equipment supplied for the work shall be new, of the best quality, and in accordance with the latest applicable specifications of the Canadian Standards Association.
2. Trademarks and labels shall not be visible in the finished work except for labels of ULC and other similar authorities and except where necessary to identify mechanical and electrical equipment, for maintenance and replacement and except where specified otherwise. Except as provided in the foregoing paragraph, locate trademarks and labels on concealed or inconspicuous surfaces or remove by grinding if necessary or paint out where surface painted, if located conspicuously.
3. The particular method, material, procedure or equipment specified in this tender shall be used as a standard.
4. S.D.S. (Safety Data Sheets) for all materials being used on this project are to be kept on site and made available for use by all concerned.
5. Controlled substances: the use of any controlled substance of any kind must be reviewed by Owner and written acceptance of its use obtained.
6. During and upon completion of the work, the Contractor shall remove from the premises all surplus materials, equipment and debris.
7. Do not use impact driven (explosive, hammer, etc., but not twist driven) fastening devices without written approval by Owner and Consultant. Properly size holes in concrete and drill cleanly to avoid oversizing for expansion anchors. When drilling upward, use jig to hold drill steady and plumb.

6. EXISTING SERVICES

1. Where work involves breaking into or connecting existing services, carry out work at times

directed by governing authorities, with minimum of disturbance to the operation of the facility, pedestrian and vehicular traffic.

2. Before commencing work, establish location and extent of service lines in area of work and notify Consultant of findings.
3. Where unknown services are encountered, immediately advise Consultant and confirm findings in writing.
4. Provide adequate bridging over trenches which cross sidewalks or roads to permit normal traffic.
5. Remove abandoned service lines to distance of six feet from foundations. Cap or otherwise seal lines at cut-off points, in manner approved by Authorities having jurisdiction.
6. Record locations of maintained, re-routed and abandoned service lines. The subcontractors concerned shall provide the General Contractor with all necessary dimensions required to accurately locate those services.
7. The Contractor shall assume full responsibility for the locations and protection of all under and above ground utilities, such as water, sewer and gas mains and building connections, hydro and telephone poles, wires and conduits, etc. when excavating or digging below grade whether they are shown on the plans or not.
8. Where the location of any of these utilities has been shown on the plans, such information is not guaranteed. It is the Contractor's responsibility to verify locations, invert elevations, etc., immediately after mobilizing on the site. If for any reason the information obtained necessitates changes in procedures or design, advise the Consultant at once. If this verification of existing conditions is not done at the outset and any problems arise, the responsibility for same will be entirely the Contractor's.
9. Contractor to provide temporary support of existing service lines and pipes where work requires excavation below existing lines for construction of new footings, foundations, etc.
10. The Contractor shall be responsible for keeping records of all buried services. The subcontractors concerned shall provide the Contractor with all necessary dimensions required to accurately locate those services.

7. CO-OPERATION (SCHEDULING & SEQUENCING)

1. The Contractor shall co-operate and co-ordinate with other trades as required, for satisfactory and expeditious completion of work. Take field dimensions relative to work. Fabricate and erect work to suit field dimensions and field conditions. Provide forms, templates, anchors, sleeves, inserts and accessories required to be fixed to, or inserted in work, and set in place or instruct related trades as to their location. Pay cost of extra work caused by and make up time lost, as a result of failure to provide in adequate time, the necessary co-operative information of items to be fixed to, or built in.

8. SIGNS AND ADVERTISEMENTS

1. Construction sign to be supplied and installed by Contractor. Locate as directed by Owner and Consultant. All costs for the installation of the sign to be included in the Pricing Form.
2. Erect no other signs, except those signs which are necessary to give direction or for safety, or warning signs, without the Owners or Consultant's permission. Where other signs are required or

wanted, obtain Owner and Consultant's approval.

9. SECURITY

1. When work at site has progressed as to become attractive for vandalism or theft, engage a recognized security guard agency to provide security service at times when tradesmen are not present in substantial numbers, at no additional cost to Owner. Continue service until after time of Substantial Performance and the Owner has occupied the building.
2. Extent of security services shall be at the discretion of the Contractor. Note that the fit, finish and new appearance of the finished building will not be compromised. Materials, products, finishes, etc. damaged due to vandalism are to be restored and/or replaced to an as-new condition.

10. MECHANICAL EQUIPMENT / SERVICES

1. Install and arrange ducts, piping, tubing, conduit, equipment and fixtures in such a way as to conserve head room and space as much as possible, to provide minimum interference and to be neat, orderly and tidy. Unless otherwise noted, run pipes, ducts, tubing and conduit vertical, horizontal and square with building grid. Conceal pipes, ducts, tubing and conduit above ceilings, behind furrings, in walls, except in mechanical rooms, equipment rooms and unfinished spaces, unless indicated or specified otherwise.
2. In all cases where a device or part of the equipment is herein referred to in the singular number, it is intended that such reference shall apply to as many such devices as are required to complete the installation.

END OF SECTION

PART 1 - GENERAL

1.1 **SUMMARY**

1. Where a product is named in the Specifications by one of the following names or by any name followed by the number of one of the following articles, the product shall conform to the standard named in the corresponding article, except as specified or indicated otherwise.

PART 2 - PRODUCTS

2.1 **METALS**

1. Aluminum (A1)
 1. Bar, rod, wire, extruded shapes; architectural: CSA HA. Series (AA/AnS1 6063) (Alcan 50S) condition T5.
 2. Bar, rod, wire, extruded shapes; Structural: CSA HA Series (AA/ANS1 6061) (Alcan 65S) Condition T6.
 3. Plate, sheet, coil; utility: CSA HA Series Alloy MC10, (AA/ANS1 3003) (Alcan D3S); condition H14 (sheet, coil), F (plate).
 4. Plate, sheet, coil; anodizing: CSA HA Series Alloy 990C, (AA/ANS1 1100) (Alcan D2S); condition H14.
 5. Specially anodized aluminum (hard anodized): (AA-M21 or M12C22A42) conform to Finishes, Aluminum, Hard Anodized (FA.HA) attached to Section 01016.
 6. Painted aluminum: conform to Finishes, Aluminum, Baked on Coatings FABC attached to Section 01016.
 7. Anodized Aluminum: AA-M21 or M12C22A31.
 8. Aluminum for elevated floor plates: (Bruce EDP) US Fed. Spec.QQ-A-591c, Ty A380 (mil-HDBK-H1C code 20087).
 9. Aluminum sand casting: (signs, etc.) AA 443.0.
2. Sheet Gauges
 1. Gauges and equivalent thicknesses of sheet, plate, coil and strip shall conform to the table of gauges and equivalent thicknesses (GET) attached to Section 01016. See 1.3.4 and 1.3.6 special application of gauges to structural sheet.
3. Galvanized Sheet Steel
 1. ASTM A525 and 526, commercial quality sheets, plain commercial galvanized, stretcher levelled or temper rolled to stretcher levelled standard of flatness if specified.

2. Same as 1.3.1 except wipe coated instead of plain commercial galvanized.
 3. Same as 1.3.1 except mill phosphatized instead of plain commercial.
 4. ASTM A446 structural quality, Grades A or B, max. permissible working stress: Grade A, 20,000 psi; Grade B, 22,400 psi. plain commercial galvanized. Gauges shall apply to core sheet and shall be msg. Coating thickness shall be added to core thickness to determine thickness of coated sheet (see 1.2.1).
 5. Same as 1.3.4 except wiped coated instead of plain commercial, with a coating not less than .050 oz. per sq. ft. (see 1.1.4).
 6. Same as 1.3.4 except wiped coated instead of plain commercial galvanized (see 1.2.1).
 7. Preparation for painting, in ship, ASTM D2092-68.
4. Copper Metals
1. Nickel Silver (white bronze): Anaconda American Brass Alloy 796 (leaded nickel silver) (has higher zinc content than any of the nickel silvers in ASTM B122-71a):

Copper	45%
Zinc	42%
Nickel	10%
Lead	1%
Manganese	2%
 2. Sheet copper and strip copper for roofing, flashing and building construction: ASTM B370, cold rolled temper, 16 oz. or as specified otherwise.
 3. Monel: (nickel 63-70%, approx. 5% other metals, remainder copper) plate, sheet, strip, hot rolled, annealed and pickled, ASTM B127; (Inco Monel 400).
 4. All applicable copper metals: ASTM B248.
 5. Architectural Bronze (Red Brass): ASTM B36, No. 3 (85% CU + 15% NI).
5. Stainless Steel
1. Plate, sheet and strip: CSA G110.6-1968, Type 302 or 304 as specified, or as specified otherwise; finish: No. 4 unless specified otherwise.
 2. Structural shapes and bars: CSA G110, 4-1968, Type 302, 304 or 316 as specified; No. 4 finish unless specified otherwise.
6. Sheet Steel
1. Sheets, cold-rolled carbon steel, commercial quality, ASTM A366 stretcher levelled or temper rolled to stretcher levelled standard of flatness if specified.

2. Porcelain enamelling steel, ASTM A424, Commercial Quality, Type 1 or 2.
3. Same as 1.6.1 except special quality for electro deposited coatings.
4. Same as 1.3.4. except un-galvanized.
5. Hot-rolled, carbon steel sheets and strip, structural quality ASTM A570-70, 5 grades (stair treads, risers, etc.).
6. Hot-rolled carbon steel sheet and strip, commercial quality ASTM A569-66T.
7. Prepainted
 1. CSSB1 Technical Bulletin No. 5, as currently amended (modified silicone alkyd, 2000).
 2. CSSB1 Technical Bulletin No. 5, as currently amended, except humidity resistance 5000 hours; salt spray resistance 400 hours; resistance to accelerated weathering 2500 hours (fluoropolymer, 10,000).
 3. CSSB1 Technical Bulletin No. 5, as currently amended, except humidity resistance 3000 hours (silicone alkyd, 5000).
7. Sheet Steel (Cold Rolled) / Structural Steel (Hot Rolled)
 1. When steel thickness is indicated by gauge or by decimal fractions of inches, it is sheet steel (1.6) or galvanized sheet steel (1.3) or stainless steel (1.5). When steel thickness is indicated by common fractions of inches, it is structural steel (1.8). However, some sheet steels are structural quality, (i.e. having guaranteed strength).
8. Structural Steel
 1. CAN/CSA G40.21-M87, 38W or 44.
9. Soldering Materials
 1. Solder: Solder for mechanical to conform to mechanical specifications. Under no circumstances shall any lead containing solder be used on any potable water piping systems throughout the project.
 2. Flux: on stainless steel:
 1. Muriatic acid killed by the addition of zinc until all effervescence stops and no excess of zinc remains; improved by the addition of a small amount of ammonium chloride, plus 10% acetic acid; or
 2. muriatic acid: ferric chloride: nitric acid 90:50:3, by weight; or
 3. Approved commercial flux designed especially for use with stainless steel, such as EutecSol 682, or approved equal.

3. Flux: on copper and galvanized steel:
 1. killed muriatic acid as specified in 1.9 b.1; or
 2. suitable rosin type.
10. Galvanizing
 1. All steel except (1.3), CSA G164 Hot Dip Galvanizing of irregular Shaped Articles. Must be done after all welding complete. No welding of galvanized products allowed.
11. Welding Materials
 1. CSA W59, CSA W 55.2; for stainless steel, ASTM A371; for aluminum, ASTM B285.
12. Metal Filler
 1. Epoxy: Hysol 6C epoxy adhesive kit (or 4297 in bulk) manufactured by Hysol (Canada) Limited, or approved equal.
13. Plating (Electrodeposited Coatings)
 1. Cadmium (on steel): ASTM A165, Type NS (13 mu), OS (7.6 mu), TS (3.8mu).
 2. Chrome (on steel): ASTM B.456, Fe Ni20b Cr r unless specified otherwise, bright unless dull specified.
 3. Chrome (on copper and copper-base alloys): ASTM B456, Type FC unless KC or QC specified; bright unless dull specified. (In this case FC is thick and QC is thin.)
 4. Weight of zinc coating and thickness to be added to base metal to determine thickness of coated material.

(Source: ASTM A-446, Tables 2 and 4)

Coating Class oz. Per sq. ft.	Triple-Spot Test, Minimum Check Limited oz. per sq. ft.	Thickness in
2.75	2.35	0.0041
2.5	2.1	0.0037
2.25	1.85	0.0033
2	1.65	0.003
1.75	1.4	0.0026
1.5	1.15	0.0022

1.25 commercial	0.9	0.0019
Wipe Coated (Colourbond or Satin coat in Canada only)	0.25	0.0005

NOTE: Light Commercial not available in Canada.

14. Paint

1. Shop primer on steel: CGSB 1-GP-40d.
2. Bituminous paint: CGSB 1-GP-108c.
3. Baked enamel on steel: primer, CGSB 1-GP-81e, Type 2; finish CGSB 1-GP-88e, baking alkyd enamel.
4. Baked enamel on aluminum: FA.BTAE.

END OF SECTION

PART 1 – GENERAL

1.1 CASH ALLOWANCES

1. Comply with requirements of G.C. 4.1 Cash Allowances and SC 3.19 of the City of Brantford's Supplementary Conditions.
2. Include the following Cash Allowances in the Contract Price. These allowances shall be expended in whole or in part, when authorized by the Owner and Consultant in writing. The unused portion of the Allowances shall be credited to the Owner.
3. The Contract Price and not the cash allowance, includes the Contractor's overhead and profit in connection with such cash allowance.

No refund of overhead and profit will be expected on any unspent portion of Cash Allowances. Likewise, no overhead and profit will be allowed on total amount by which all Cash Allowances are exceeded.

4. Expend cash allowance as directed by the Owner and Consultant in writing. Allowance will be adjusted to actual cost but no adjustment will be made to Contractor's charges including overhead and profit which are included in the Contract Price.
5. Cash allowances are designed for work and services deemed to be necessary by the Owner, from time to time, throughout the execution of the Work. Where a cash allowance refers to an item or category of work already included in the Contract Documents, it shall be assumed to cover work or services in addition to that included, unless specifically indicated otherwise.
6. Contractor may be required from time to time, to assist in tendering of certain items of work or services covered by allowance, as directed by Consultant.
7. Material Supply Items:

1. Scope for material supply items covered by Cash Allowance includes:
 1. Net cost of material.

2. Applicable taxes and duties.
 3. Delivery to site.
2. In addition to above scope covered by Cash Allowance include in Contract Price costs for:
 1. Handling at site, including unloading, uncrating, storage and hoisting.
 2. Protection from elements, from damage.
 3. Labour, installation, and finishing.
 4. Other expenses required to do cash allowance work (i.e. contract co-ordination).
 5. Overhead and profit.
8. Material and Installation Items:
 1. Scope of each material and installation item covered by Cash Allowance includes:
 1. Net cost of material.
 2. Applicable taxes and duties.
 3. Delivery to site.
 4. Handling at site, including unloading, uncrating, storage and hoisting.
 5. Labour, installation, and finishing.
 2. In addition to above scope covered by Cash Allowance include in Contract Price costs for:
 1. Protection from elements, from damage.
 2. Overhead and profit.
 3. Other expenses required to do cash allowance work (i.e. contract co-ordination).
9. Inspection and Testing Work:
 1. Scope for inspecting and testing covered by Cash Allowance includes:
 1. Net cost of testing laboratory services and field inspection.
 2. In addition to above scope covered by Cash Allowance include in Contract Prices for:
 1. Overhead and profit.

2. Supply of material tested, patching and completion of work tested.
 3. Other testing on re-testing work specified in Section 01410.
 4. Other expenses required to do cash allowance work (i.e. contract co-ordination).
10. The following is a breakdown of the Cash Allowances exclusive of any value added or consumption taxes including HST to **be included** in the Contract Price. NOTE: The breakdown of Cash Allowances noted below is for convenience only. It is the intent that funds may be transferred from item to item without requiring any change to the contract value until and unless the total of Cash Allowances is exceeded.
- | | | |
|----------|---|----------------------|
| 1 | Inspection and Testing | \$7,500 |
| | Scope of work includes: | |
| | <ul style="list-style-type: none">• Testing of native soil to confirm bearing capacity for footings.• Testing of compacted granular backfill.• Concrete compressive strength testing.• Asphalt testing | |
| 2 | Cabinetry | \$15,000 |
| 3 | Door Hardware | \$18,000 |
| | <ul style="list-style-type: none">• Supply of door hardware only. Installation is included in the Contract. | |
| 4 | Electrical Service & Connections | \$12,000 |
| | Scope of work includes: | |
| | <ul style="list-style-type: none">• For installation of Hydro Services by Hydro | |
| 5 | Hazardous Material Removal & Disposal | \$5,000 |
| | Scope of work includes: | |
| | <ul style="list-style-type: none">a. For any discovered items not identified in reports for the existing building removal. | |
| | Subtotal of Above Cash Allowances
(not including Contingency Allowance) | \$57,500 +HST |
11. Progress payments on accounts of work authorized under cash allowances shall be included in the Consultant's monthly certificate for payment. Copies of invoices are to be submitted to substantiate claims.
12. Provide credit at the end of the project for all unused allowances.

END OF SECTION

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

1. Requirements and limitations for cutting and patching the Work.

1.2 SUBMITTALS

1. Submit written request to Owner and Consultant in advance of cutting or alteration which affects:
 1. Structural integrity of any element of Project.
 2. Integrity of weather-exposed or moisture-resistant elements.
 3. Efficiency, maintenance, or safety of any operational element.
 4. Visual qualities of sight-exposed elements.
 5. Work of the Owner or separate contractor.

1.3 INCLUDE IN REQUEST:

1. Identification of Project.
2. Location and description of affected work.
3. Statement on necessity for cutting or alteration.
4. Description of proposed work, and products to be used.
5. Alternatives to cutting and patching.
6. Effect on work of the Owner or separate contractor.
7. Written permission of affected separate contractor.
8. Date and time work will be executed.

1.4 GENERAL

1. Execute cutting, fitting, and patching including excavation and fill, to complete the Work.
2. Fit the several parts together to integrate with other work.
3. Uncover work to install ill-timed work.
4. Remove and replace defective and non-conforming work.
5. Remove samples of installed work for testing if requested by Consultant.
6. Provide openings in non-structural elements of Work for penetrations of mechanical and electrical work.

1.5 INSPECTION

1. Inspect existing conditions, including elements subject to damage or movement during cutting and patching.
2. After uncovering, inspect conditions affecting performance of work.
3. Beginning of cutting or patching means acceptance of existing conditions.

1.6 PREPARATION

1. Provide supports to assure structural integrity of surroundings, devices and methods to protect other portions of project from damage.
2. Provide protection from elements for areas which may be exposed by uncovering work. Maintain excavations free of water.

1.7 PERFORMANCE

1. Execute work by methods to avoid damage to other work, and which will provide proper surfaces to receive patching and finishing.
2. Use material to match existing.
3. For a change in material, submit request for substitution under provisions of Section 01630.
4. Employ qualified trade contractor to perform cutting and patching for weather-exposed and moisture-resistant elements and sight exposed surfaces.
5. Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools are not permitted without prior approval.
6. Restore work with new products in accordance with requirements of Contract Documents.
7. Fit work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
8. Refinish surfaces to match adjacent finishes: for continuous surfaces refinish to nearest intersection.

END OF SECTION

1.1 COLOUR SCHEDULES

1. The attached Interior Finishes Schedule dated July 16,2025, was prepared for the Maintenance Building at the Wayne Gretzky Municipal Golf Course by G. Douglas Vallee Ltd.

END OF SECTION

1.1 **SHOP DRAWINGS**

1. Submit shop drawings electronically in PDF format in accordance with GC 3.8 of CCDC Document 2, 2020 and as revised in the Supplementary General Conditions, as required in various sections of these specifications and on the drawings.
2. General Contractor and Subtrade/Supplier/Manufacturer to 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 coordinated with requirements of Work and Contract Documents. Submittals are to incorporate contract drawing details and specification items specific to the project. Submittals not stamped, signed, or dated by the General Contractor or project specific will be returned without being examined and considered rejected.
3. General Contractor to coordinate preparation of submittals with all necessary Subtrades / Suppliers / Manufacturers for each submittal to ensure all materials are included for a proper and complete installation. i.e. reinforcement details
4. All shop drawings are to be submitted individually for each specification section / scope of work. Multiple sections / scope of work are not to be combined into one submission for review.
5. Shop drawings that are incomplete will be returned to the contractor with out any review undertaken. They will be returned without being examined and considered rejected.
6. Any additional submissions after the original submission are to have all alterations / changes / updates / additional information red lined along with all clarifications to notations from previous submissions.
7. Notify, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
8. Verify field measurements and affected adjacent Work are coordinated.
9. Shop drawings are to be dimensioned in metric units; however, metric and imperial dimensions both shown on drawings is acceptable. When shop drawings are submitted with only imperial dimensions, they will be returned without being examined and considered rejected.
10. No fabrication and or installation shall commence until all shop drawings have been approved / reviewed.
11. Materials / products that have been installed on site that are not approved / reviewed / as specified, will be removed at Contractor's expense.
12. Materials / products that are not submitted by the subtrade, will be submitted and supplied by the Contractor and installed by the subtrade.
13. Contractor's responsibility for errors and omissions in submission is not relieved by Consultant's review of submittals.
14. Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Consultant review.
15. Keep one reviewed copy of each submission on site.

16. Shop Drawing Stamp:
- "Reviewed": means the submittal does not require resubmission.
 - "Revise As Noted": means the submittal does not require resubmission, however, all marked up / red pen / review comments must be incorporated.
 - "Revise & Resubmit": means the submittal requires resubmission to the Consultant or additional information is required to complete the submission. The submission will be considered rejected.
 - "Not Required to be Reviewed by Consultant": means the submittal does not require to be reviewed by the Consultant but required a review by a sub-consultant.
17. Shop drawings once submitted by the Contractor for review to account for 10 working days for consultant review and return.

1.2 SAMPLES

1. Submit samples as listed in List of Samples below.
2. Samples of materials, both manufactured and otherwise, proposed for the use on the work shall be submitted to the Consultant for approval as required by the Contract Document and/or reasonably required by the Consultant. The work shall be in accordance with approved samples. All samples shall be supplied and delivered to the Consultant free of charge. The approval of samples shall not be construed as an acceptance of work subsequently carried out.
3. Samples shall be labelled indicating: date of submission, name of project, names of contractor and manufacturer, and complete identification of locations at which materials are to be installed.

1.3 MOCK-UPS & REVIEWS

1. Contractor is to notify Consultant seven (7) days minimum prior to any on-site mock-up(s) or review(s). This is applicable to all specification sections.

1.4 LIST OF SHOP DRAWINGS

1. Submit Shop Drawings as specified in the following Sections below:

1.5 LIST OF SAMPLES

1. Submit Samples as specified in the following Sections below:

1.6 EXTENDED WARRANTIES

1. In addition to the warranty requirements of GC 12.3 of CCDC Document 2, 2020, and as revised in the City of Brantford's Supplementary Conditions, the Contractor shall note that the following extended warranty periods are required by the Contract Documents for the individual items under respective Sections.

1.7 MAINTENANCE MANUALS

1. Submit Maintenance Manuals as specified in the following Sections below:

1.8 EXTRA MATERIAL

1. Submit extra material as specified in the following Sections below:

Section	Section Name	Product Data	Shop Drawings	Samples	Maintenance Manuals	Extra Material	Extended Warranty
DIVISION 2 – SITE CONSTRUCTION							
02010	Soils Report						
2080	Transportation and Disposal of Hazardous Materials						
02100	Demolition, Superstructure, Shoring & Bracing		X				
02215	Earthwork – Below Paving, Sidewalks & Landscaping		X				
02220	Excavating, Trenching and Backfilling						
02225	Selective Demolition						
02510	Asphaltic Paving	X					2
02520	Concrete Walks, Curbs & Gutters						2
02550	Weeping Drains & Subdrains						
02650	Structures	X	X				
02660	Water Distribution	X					
02730	Sanitary Sewerage		X				
02830	Chain Link Fencing & Gates		X		X		
02920	Topsoil Placement & Grading						
02930	Sodding						
02950	Trees, Shrubs & Groundcover Planting						
DIVISION 3 - CONCRETE							
03050	Testing for Concrete and Reinforcement						
03100	Concrete Formwork & Accessories						

Section	Section Name	Product Data	Shop Drawings	Samples	Maintenance Manuals	Extra Material	Extended Warranty
03200	Concrete Reinforcement		X				
03300	Cast-In-Place Concrete	X	X				
03345	Concrete Floor Finishing	X			X		
DIVISION 4 - MASONRY							
04100	Masonry Mortar	X		X	X	X	
04720	Cast stone Masonry		X	X	X	X	
DIVISION 5 - METALS							
05500	Miscellaneous Metals		X				
DIVISION 6 - WOOD AND PLASTICS							
06100	Rough Carpentry						
06192	Prefabricated Wood Trusses		X				
06200	Finish Carpentry	X	X	X	X		5
06400	Architectural Woodwork	X	X	X	X		5
DIVISION 7 - THERMAL AND MOISTURE PROTECTION							
07185	Under Slab Vapour Barrier	X					
07190	Vapour Barriers	X					
07195	Air-Vapour Barrier	X					5
07196	Air Barrier	X					2
07211	Rigid Insulation	X					
07213	Mineral Wool Insulation	X					
07270	Fire Stopping & Smoke Seals	X			X		
07300	Asphalt Shingles	X		X	X		15
07410	Metal Roof System	X		X	X		2
07465	Preformed Metal Siding	X		X	X		5
07620	Sheet Metal Flashing & Trim	X			X		3
07630	Flashing, Gutters & Downspouts						
07900	Sealants & Caulking	X		X	X		5

Section	Section Name	Product Data	Shop Drawings	Samples	Maintenance Manuals	Extra Material	Extended Warranty
DIVISION 8 - DOORS AND WINDOWS							
08110	Hollow Metal Doors, Frames & Screens	X	X		X		
08360	Sectional Steel Overhead Doors	X	X		X		3
08556	Vinyl & Fibreglass Windows	X	X		X		
DIVISION 9 - FINISHES							
09000	Subsurface Preparation for Floor Finishes	X					
09250	Gypsum, Tile Backer Wallboard	X	X	X		X	
09300	Porcelain & Ceramic Tile	X	X	X	X		
09500	Acoustical Treatment	X	X	X	X		10
09650	Resilient Flooring		X	X	X	X	10
09900	Painting & Finishing	X	X	X	X	X	
DIVISION 10 - SPECIALTIES							
10400	Signage - Floor	X	X				2
10500	Metal Lockers - Personal	X	X		X		2
10800	Washroom Accessories	X	X		X		
10950	Manufactured Specialties	X	X		X		2
DIVISION 15 – MECHANICAL See mechanical drawings for all specification sections							
DIVISION 16 – ELECTRICAL See electrical drawings for all specification sections							

CERTIFICATE FOR PAYMENT APPLICATION FORM

NOTE: HST TO BE INCLUDED IN EACH OF THE FOLLOWING VALUES:

Contractor: _____

Application No. _____

Work: _____

Date: _____

Period Covered:

Description	Contract Amount	% To Date	Value Performed To Date	Value Previously Performed	Value Current Period	Balance to Complete
This Section to show breakdown of Contract such details as:						
General Conditions	\$	\$	\$		\$	\$
Excavation						
Concrete Footings						
Concrete Walls, Cash Allowances, Hardware, etc.						
SUB-TOTAL						
Change Orders No. 1 No. 2 No. 3						
TOTAL CONTRACT						

SUMMARY (HST to be included in all items)

Value of Work Completed to date	\$ _____
Less Holdback of 10%	\$ _____
Holdback Released	\$ _____
Current Holdback (Net Retained)	\$ _____
Sub-Total	\$ _____
Less Previous Certificates	\$ _____
Amount of this Claim	\$ _____
Total of H.S.T. included above	(\$ _____)

GENERAL CONTRACTOR'S H.S.T. NO. _____

END OF SECTION

1. See Individual Specifications Sections for full listing of inspections and approvals.
2. Consultant's approvals required:
 1. Consultant's approval before interfering with existing services and apparatus. One week notice to be given. Section 01010.
 2. Consultant's approval of work schedule (Progress Schedule) - 01310.
 3. Consultant's approval of construction signs and locations - 01015.
 4. Consultant's approval of temporary fence and layout - 01015.
 5. Consultant's approval of substitutions - 01500.
 6. Consultant's approval of topsoil stockpile locations - 02215.
 7. Consultant's approval of footing bearing soil compaction - 02200.
 8. Consultant's approval of compaction - 02200.
 9. Consultant's approval of weeping drains and subdrains - 02550.
 10. Consultant's approval of cast-in-place concrete materials, sandblasting, tint, admixtures and tests - 03300.
 11. Consultant's approval of Masonry Sample Wall - 04200.
 12. Consultant's approval before installing flooring - 01010.
 13. Consultant's approval of caulking joint samples - 07900.
 14. Consultant's approval of sealant samples - 07900.
 15. Consultant's approval of firestopping locations – 07250, 07270 and 07812.
 16. Consultant's approval of air/vapour barrier and vapour retarder installation and locations – 07185, 07190, 07195.
 17. Consultant's approval of insulation installation and locations – 07211, 07213, 07214 and 07215
 18. Consultant's approval of roofing installation – 07511, 07520, 07525, 07536 and 07540.
3. Notify Consultant:
 1. Notify Consultant for Deficiency Inspection upon agreed Substantial Completion.
 2. Notify Consultant for One-Year Warranty Inspection.
 3. Notify Owner for Two-Year Roofing Inspection for Extended Warranties

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4. Notify Owner for Two Year Inspection of Extended Warranties
 5. Notify Owner for Three Year Inspection of Extended Warranties
 6. Notify Owner for Five Year Inspection for Extended Warranties
 7. Notify Owner for Ten Year Inspection for Extended Warranties.
4. Submit samples for approval.

END OF SECTION

1.1 CONSTRUCTION SIGNAGE AND ADVERTISEMENTS

1. Construction sign to be supplied and installed by Contractor as given to Contractor by Vallee. Locate as directed by Owner. All costs for the installation of the sign to be included in Base Tender Sum (not part of Signage Allowance). It will be one of two sign styles,
 1. Vinyl rollable sign with eyelets to be zip tied to construction fence.
 2. Vinyl printed sign with metal frame pushed into grade.
3. Erect no other signs, except those signs which are necessary to give direction or for safety, or warning signs, without the Owner's permission. Where other signs are required or wanted, obtain Owner's approval.

END OF SECTION

1.1 INTERFERENCE DRAWINGS

1. Before commencing any work, the General Contractor, along with their trade contractors and subtrades, are to prepare interference drawings to ensure that all system components are to be properly accommodated within the spaces provided.
2. Ensure that all building systems including architectural, structural, mechanical, electrical and any other discipline's components to not have interference or have multiple items in the same place.
3. Ensure that all building systems including architectural, structural, mechanical, electrical and any other discipline's components to not have discrepancies or are shown differently on different discipline drawings.
4. Ensure that all clearances required by jurisdictional authorities and for proper installation and maintenance are indicated and maintained.
5. Schedule meetings on site with all associated trades to review all interference areas until all issues have been coordinated and required interference drawings issued.
6. Prepare drawings to indicate coordination and method of installation of a mechanical system with sprinkler, electrical, structural and other systems where their relationship is critical. Ensure all details of equipment, apparatus and connections are coordinated.
7. The General Contractor shall provide interference drawings prepared by their Mechanical, Electrical, structural steel, OWSJ, misc. metals and Sprinkler subtrades. Drawings are to be red-line markups scanned to PDF Format and shall indicate any perceived interference between structural, mechanical, electrical and sprinkler work and the work of all other Divisions along with proposed solution(s) to such interference(s).
8. Failure to coordinate with all other trades could result in reworking of installed equipment, piping or ducting at the discretion of the Consultant. Any reworking to accommodate the installation of other trades is to be performed at no extra cost to Owner.
9. All interference drawings shall be submitted and approved prior to the second Certificate of Payment being released.

1.2 COOPERATION AND COORDINATION

1. Cooperate and coordinate with other trades as required for satisfactory and expeditious completion of work. Take field dimensions relative to work. Fabricate and erect work to suit field dimensions and field conditions. Provide forms, templates, anchors, sleeves, inserts and accessories required to be fixed to, or inserted in work, and set in place or instruct related trades as to their location. Pay cost of extra work caused by and make up time lost, at no additional cost to Owner, as a result of failure to provide in adequate time, the necessary cooperative information of items to be fixed to, or built in.

END OF SECTION

PART 1 - GENERAL

1.1 GENERAL

1. This Section details the General Contractor's responsibilities in the preparation, submission and maintenance of construction schedules with form and requirements for periodic revisions. The Sub-Contractors shall provide the General Contractor with their schedule of work and co-ordinate the work with the General Contractor and the work progress of other trades on site.

1.2 REQUIREMENTS INCLUDE

1. Schedule, Form, Content
2. Stages/Phased Construction
3. Schedule Revisions
4. Weekly Schedule Updating

1.3 SCHEDULES REQUIRED

1. Submit the following schedules:
 1. Construction Progress Schedule
 2. Bi-weekly Schedule and Workforce Loading
 3. Submittal Schedule for Shop Drawings and Product Data and Shades
 4. Product Delivery Schedule: include required decision dates for finishes and colours.
 5. Sub-schedule showing submittals, review times, procurement schedules, and delivery dates.
 6. Sub-schedules to define critical portions of overall schedule.

1.4 SCHEDULE FORM

1. Prepare schedules as horizontal bar chart (GANTT or CPM). Provide separate horizontal bar column for each trade or operation, or separate activity for each operation that can be completed independently of other operations or trades. Provide as follows:
 1. Order: chronological order of beginning of each item of work.
 2. Identification: identify each column by distinct graphic delineation.
 3. Horizontal Time Scale: identify first work day of each week.
 4. Scale and Spacing: to allow space for updating.
 5. Minimum Sheet Size: 11" x 17" for electronic submission.

1.5 SUBMITTALS SCHEDULE

1. Include schedule for submitting shop drawings, product data, and samples. Co-ordinate with Section 01300 - Submittals requirements. Incorporate into Preliminary Progress Schedule and bi-weekly Schedule updates.
2. Indicate dates for submitting, review time, resubmission time, float time, and last date for meeting fabrication schedule.
3. Include dates when submittals and delivery will be required for Owner-furnished products if applicable.
4. Include dates when reviewed submittals will be required from the Consultant.

1.6 PRODUCT DELIVERY SCHEDULE

1. Include dates for delivery of products specified in Section 01020 – Allowances if applicable.
2. Include dates for products furnished by Owner if applicable.
3. Submit a schedule of required equipment order dates and delivery dates for products and/or assemblies which involve significant production time or fabrication time and/or will significantly affect the project schedule if not available when needed.

1.7 CONSTRUCTION PROGRESS SCHEDULE

1. Submit a preliminary construction schedule and phasing plan at the preconstruction meeting, for approval.
2. Submit a bar-chart progress schedule a minimum of seven (7) days before first progress application for payment. Prepare schedule in sufficient detail to indicate timing of major activities during phased progress of the Work and which will ensure completion of the Work on or before schedule.
3. On schedule indicate a time bar for each major construction activity to be performed at the site, properly sequenced and co-ordinate with other activities of work. Itemize activities in sufficient detail that no one bar exceeds two months in duration (separate long running trades such as masonry into logical sub-sections). Allow sufficient space below planned time bar for another time bar to record actual progress.
4. Show dates for commencement and completion of all activities. Estimate duration period and float (contingency) time for each activity.
5. Show projected percentage of completion for each activity as of the date of submission of monthly progress payment applications and/or to the date of submission of schedule when requested.
6. Indicate actual progress of each activity to date of submission of schedule. Indicate current status of all activities to date of submissions of schedule by showing where

behind, on or ahead of planned schedule.

7. Show changes occurring since previous submission of schedules:
 1. Major changes to scope
 2. Activities modified since previous submission
 3. Revised projections of progress and completion
 4. Other identifiable changes.
8. Confirm commencement, duration and completion dates of all activities with subcontractors, subtrades and suppliers.
9. Deliver to Owner and Consultant, at the end of each calendar month with progress application a project status report derived from evaluation of Schedule.
10. Include in this report updated schedule together with such supporting narrative and such graphical presentations necessary to clearly outline the progress of Work, areas of current and anticipated problems, effect of changes on schedules of major trade subcontractors and proposed corrective action.
11. Be aware that the nature and day-to-day functioning of the Owner will have precedence over any phasing and arranged schedule, and stoppage of the work with good reason, and changes to the schedule may be made by the Owner on an as needed basis without prior notice and at no extra cost to the contract. The Contractor shall take this into account, and shall co-ordinate and co-operate with the Owner and reschedule the work to accommodate the Owner's requirements.
12. Lengthy shutdowns and disruptions of services will not be tolerated, and strict attention shall be paid to minimizing any disruption. Shut downs and/or disruptions of services must be scheduled and approved by the Owner and Consultant at least 72 hours prior.
13. Schedule required work in occupied areas in co-ordination with the Owner and such schedule be approved by the Owner prior to start of the work. Provide at least 48 hours minimum notice when work in existing area is required.

1.8 STAGED / PHASE CONSTRUCTION

1. Prepare and submit sub-schedules for each separate stage of Work when pertinent to the project.
2. Provide sub-schedules to define critical portions of prime concern to masterschedule.
3. Describe start and stop, float time and affected work.

1.9 BI-WEEKLY SCHEDULE UPDATE AND WORKFORCE LOADING

1. Use the Construction Progress Schedule as a basis for reporting on a bi-weekly basis the complete status of construction progress, scheduled activities and workforce loading on the project.
2. There will be an Owner/Consultant/General Contractor/Trade Contractor meeting every

second week to review the project status. Provide a detailed 2-week work schedule (based upon the Construction Progress Schedule) outlining work activities and workforce requirements planned for that period.

3. Identify current and anticipated problems and delays with respect to the past work period the effects of said problems on the overall schedule and proposed corrective measures.
4. Submit to the Owner and Consultant two days prior to site meetings (every second week) the following:
 1. Updated Construction Progress Schedule, clearly labelling the **approved** substantial completion date.
 2. Outline of anticipated work activities for the forthcoming period.
 3. Outline of required and/or anticipated workforce levels (by trade) for the forthcoming period.
 4. Problems or delays experienced and/or anticipated.
 5. Proposed corrective measures to react to problems or delays.

END OF SECTION

1. PROJECT MEETINGS

1. Arrange regular meetings at two-week intervals and notify the representatives of the Owner, Consultant, Engineer and each subcontractor concerned with the current progress.
2. Contact all subcontractors concerned at least 24 hours in advance and request their presence at job meeting.
3. Review approved progress schedule for rapid and efficient completion of work according to Contract requirements, with suppliers of materials and subcontractors.
4. Post and forward copies of progress schedule for advice of interested parties.
5. Record the minutes of each meeting and send copies to all attending and interested parties not later than two days after the meeting. In addition, send copies to the Consultant and Owner. Contractor to provide updated change order register and shop drawing register attached to each record of minutes to indicate exactly what has been issued and the status of approvals and/or distribution.
6. Keep the Owner and Consultant informed of progress, delays and of potential delays during all stages of work to avoid delays.

END OF SECTION

1. **GENERAL REQUIREMENTS**

1. Examine Drawings, Specifications and Schedules for the extent of new work to be executed.
2. Comply with all rules, regulations, and by-laws of authorities having jurisdiction.
3. Arrange and pay for necessary permits and inspection and deliver to the Owner and Consultant upon request.
4. Examine Drawings, Specifications and Schedules for the placement and installation of all accessories, manufactured specialties, products, appliances and equipment. Include installation of all required mechanical and electrical services.
5. Equipment Schedule forms part of the contract and is included in the contract. All equipment is to be carried in base bid.

2. **DESCRIPTION OF WORK**

1. Provide all labour, material and equipment, fees and permits, necessary to install equipment and related supports as recommended by each individual manufacturer for each piece of equipment noted on the Equipment Schedule, Drawings, and Specifications. Refer to mechanical, electrical and civil drawings and specifications for other equipment items to be supplied and installed by the General Contractor. Include installation of all required mechanical and electrical services.

3. **EQUIPMENT SCHEDULE DESIGNATIONS**

1. Isolated equipment items on the equipment schedule falls into Groups CSCI, OSCI, OSOI, or O/V, and is indicated in the Equipment Schedule. Other equipment, accessories and manufactured specialty items not listed on the attached schedule but listed elsewhere throughout the contract documents shall be contractor supplied and contractor installed. Include installation of all required mechanical and electrical services.

Descriptions of the work for each isolated item of equipment under each group is as follows:

1. **Group CSCI (Contractor Supplied, Contractor Installed):** New Equipment or products supplied and installed by General Contractor. Include installation of all required mechanical and electrical services.
2. **Group OSCI (Owner Supplied, Contractor Installed):** New and existing equipment or products supplied by Owner and installed by General Contractor. General Contractor to include installation of all required mechanical and electrical services.
3. **Group OSOI (Owner Supplied, Owner Installed):** New and existing equipment or products supplied by Owner and installed by Owner. General contractor to include installation of all required mechanical and electrical services.
4. **Group O/V (Owner Supplied, Vendor Installed):** New equipment or products supplied by Owner and installed by Vendor (Contractor to ensure structural mounting requirements are met). General Contractor shall schedule and co-ordinate Vendor installed equipment with the Work and do all things necessary in the Work for Installation of Vendor installed equipment. General Contractor to include installation of all required mechanical and electrical services.

4. GENERAL

1. The requirements of each item of equipment are based on manufacturers' or suppliers' information. Before proceeding with work involving equipment, verify the actual equipment to be installed, and ascertain the criteria for services and supports actually required.

5. DEFINITIONS

1. "Installation" of equipment includes all labour, material, and equipment necessary for off-loading on delivery of equipment; removing and disposing of all covering and packaging; handling, storing, breaking down into parts if required, transferring to the proper location in the building, making connections to building services, covering and protecting, final removal of covering and protections and making ready as required to form equipment which is fully operative, approved and in accordance with reviewed shop drawings and manufacturer's instructions. Include installation of all required mechanical and electrical services.
2. "Supply" of equipment includes all labour, materials, and equipment necessary for the purchase and delivery to the site of the equipment.

6. OPERATING INSTRUCTIONS

1. Demonstrate the functioning of the new equipment to the Owner at a time convenient to the Owner prior to acceptance of the facilities for all Contractor supply and installed equipment and Owner supplied and Contractor installed equipment. Fully explain all operating and maintenance procedures.

7. SCHEDULING

1. Arrange schedules for the expeditious delivery of new equipment in cooperation with the Owner. Advise the Owner, in writing and in reasonable time of the required delivery date for each item of equipment installed by the Contractor.

8. ROUGHING-IN INFORMATION

1. The Owner will provide all available manufacturer instructions and manuals associated with each piece of equipment supplied by the Owner. Refer to mechanical and electrical drawings and specifications for information required for the installation of equipment supplied by the Owner.
2. The Contractor will provide all necessary information required for the installation of equipment supplied by the Contractor and installed by Contractor.

9. EQUIPMENT HANDLING

1. Ensure all new equipment can be handled into and through the building to its new location without alteration or damage to the building or fitments. Make necessary arrangements for large equipment to be delivered in sections as required. Assemble this equipment when located in place of use.
2. Ascertain items of equipment which cannot be handled in this way and arrange for it to be located in place in the building before obstructions to its passage through the building are in place.

10. SUPPORTS

1. Equipment shall be supplied ready for attachment directly to the building or to supports.

2. Provide all supports, brackets, hangers, connections and fasteners required to attach the equipment to the building.

11. INSTALLATION

1. Before installation commences, ensure that mounting devices, members, and surfaces are satisfactory for fitting, and adequate for securing of work.
2. Install work to meet manufacturer's recommended specifications, true, tightly fitted, and level or flush to adjacent surfaces, as suitable for installation.
3. Work shall include rough hardware, fastenings, and other items necessary for secure installation.
4. Use only fastenings suitable for materials. Do not use through fastenings at roofs, floors, or walls.
5. Install work straight, plumb, level, and secured to prevent distortion or displacement, or both. Shim as necessary with concealed shims. Where required, use grout on which iron oxide deposits will not form.
6. Secure fixed equipment to building structure or construction as required to maintain it permanently in place and so that it functions properly with no damaging vibration to the building or itself.
7. Install equipment with connections provided as required for mechanical and electrical services. Make mechanical and electrical service connections in accordance with requirements of Sections 21, 22, 23 26, 27 and 28.

12. ADJUSTING AND CLEANING

1. Verify under work of this Section that installed products function properly, and adjust them accordingly to ensure satisfactory operation.
2. Lubricate equipment as specified by equipment manufacturer.
3. Clean and polish all surfaces that are exposed to view from any location on completion of installation.
4. Remove packaging materials and debris from equipment supply and installation from the site; including Owner supplied Contractor installed equipment.

13. CERTIFICATION

1. Provide for certification of all new and relocated equipment by the appropriate vendor and by other third parties.

14. OPERATING INSTRUCTIONS

1. Demonstrate the functioning of the new equipment to The Owner at a time convenient to the Owner prior to acceptance of the facilities. Fully explain all operating and maintenance procedures.

15. ACCESSORIES AND MANUFACTURED SPECIALTIES

1. Refer to Washroom Accessory Schedule (**Section 10800**) and Manufactured Specialties Schedule (**Section 10995**)

END OF SECTION

1. SETTING OUT

1. Lay out work from control bench marks and indicated verified reference points. The General Contractor shall have a qualified land surveyor, registered to practice in the Province of Ontario and approved by Consultant, verify that building foundations and finish grade levels and locations are in accordance with the contract documents. File certification with Building Department and Consultant immediately after foundations are completed. Payment for the Land Surveyor will be carried out by the General Contractor not under the Cash Allowance.
2. The Land Surveyor shall provide four lines and one benchmark for the General Contractor to layout their work. The General Contractor will provide these layout lines and benchmarks for work on all other areas once they begin work on the site.
3. Protect and preserve bench marks and reference points. Inform Consultant immediately if bench marks or reference points are disturbed or damaged by any work and pay for their repair and/or replacement.
4. Locate grid lines and locations of walls, partitions, shafts and all parts of the construction as work proceeds.
5. Verify grades, lines, levels and dimensions indicated, particularly with road and sidewalk elevations, and report any errors or inconsistencies to the Consultant before commencing work. Confirm job dimensions at once to allow prompt checking of drawings.
6. Give particular attention to finished dimensions and elevations of the work. Make finished work fit indicated spaces accurately. Make finished work flush, plumb, true to lines and levels and accurate in all respects

2. PROTECTION

1. Conform to Ontario Building Code, latest amendments, and the Construction Health and Safety Act, as currently amended.
2. Provide spare safety helmets and reflective orange vests for and enforce their use by Owner, Consultant, their representatives and any authorized visitors to Site.
3. Protect excavation, trenches, and buildings from damage by rain, water, ground water, backing up of drains or sewers and other water, frost and all other weather conditions. Do not allow footings or slabs to be placed on frozen ground. Do not permit excavations to reach full depth indicated when freezing temperature may be expected unless footings or slabs can be placed immediately after excavation has been completed. Protect excavations from frost by placing suitable approved insulating material to adequate depth. Provide necessary pumps and temporary drainage to keep project free of water throughout construction. Pump water to public sewers or ditches by approved means. Refer to soils report for details. Control grading around excavations to prevent surface water from draining into excavation and from damaging adjoining property.
4. Protect building from movement and damage, especially during filling and compaction and until elements are securely anchored and cannot be damaged or moved by filling or compaction. Obtain approval of authorities having jurisdiction for such work and make changes as required by them.

5. Provide and maintain in working order, adequate, temporary Canadian Underwriters labelled, chemical solution (soda acid) Class A.1, fire extinguishers and locate in prominent positions to approval of authorities having jurisdiction.
6. Before starting the Work contact the Public Utilities for location of underground services.
7. Ensure the building is maintained weather tight, safe and secure. Furnish all temporary protection as may be required.
8. The Contractor shall provide temporary drainage as required at construction access points to prevent the build up of dirt and mud and the migration of this onto municipal streets. Periodic cleaning of municipal streets is to be provided when required and whenever specifically requested by the municipality.

3. PROTECTIVE FENCING

1. The contractor shall install and maintain temporary 6'-0" (1800 mm) high chain link fences complete with steel tubular top rail supports and steel posts, with chain link gates and locks (alternate Modu -loc or similar construction fencing) to fence off construction access and construction areas, and pavement protection as required for protection of public, and of public and private property and as directed by the Owner and Consultant and as required by law and by authorities having jurisdiction. The installation of temporary fences shall be to provide the least disruption and to meet the approval of the Owner. Erect sturdy railings around shafts, stairwells and the like to protect workers and public from injury. Equip foregoing protection with warning lights and signs. Alter, remove and relocate or replace hoardings, barriers, and entrances therein as required by authorities having jurisdiction and by the work. Hazards requiring such protection shall be eliminated as soon as possible and protection devices removed. Maintain fences and gates until construction is complete.

4. PROTECTION FOR OFF-SITE & PUBLIC PROPERTY

1. Protect surrounding private and public property from damage during performance of work.
2. Be responsible for damage incurred, at no additional cost to Owner.

5. PROTECTION OF BUILDING FINISHES & EQUIPMENT

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. Replace or repair finishes or equipment so damaged, at no additional cost to Owner.
4. Adequately protect existing and new floors and finishes from damage. Take special measures when moving heavy loads or equipment on them.
5. Keep floors free of oils, grease, or other material likely to damage them, discolour them, or affect bond of applied finishes.
6. Once building is enclosed, keep floors as dry as possible after curing.

6. TREE PROTECTION

1. Protect tops, trunks and roots of existing trees on project site that are to remain. Box, fence or otherwise protect trunks of existing trees which may be subject to construction damage before any work is started. Do not permit heavy equipment or stockpiles within branch spread. When approved in writing by the Owner, remove interfering branches without injury to trunks and cover scars with tree paint.
2. Wherever excavating is required within branch spread of trees that are to remain, do not cut tree roots, but tunnel or trench under or around roots by careful hand digging and without injury to roots.

7. FIRE PROTECTION AND ACCESS TO EQUIPMENT AND EXITS

1. Take necessary precautions to eliminate fire hazards and to prevent damage to work, equipment and other property both public and private having to do with the work. Inspect work of this contract at least once a week for this purpose.
2. Provide and maintain in working order suitable Underwriters' labelled fire extinguishers and locate in prominent positions, to approval of authorities.
3. When welding, brazing and performing any operation with an open flame, a portable fire extinguisher shall be kept within 10 feet (3000 mm) of the operator at all times.
4. Store and locate materials and equipment packed in cardboard cartons, wood crates and other combustible containers in orderly and accessible manner. Place approved types of firefighting equipment in vicinity of materials or equipment packed in this type of crate or carton until permanent fire protection and equipment are available.
5. Store all rags and waste containing oil, grease or other flammable materials in an approved metal container and remove from the site at the end of each working day.
6. Only fire-resistant tarpaulins are permitted on site.
7. Locate temporary buildings and storage areas in relation to their hazards and probability of damage to existing buildings under construction. Unless constructed of non-combustible materials, wherever possible locate them at least 33 feet (10 m) away from buildings. If constructed of combustible materials separate these structures into small detached units.
8. Provide and maintain free access at all times from the street to fire hydrants and to outside connections for standpipes or other fire extinguishing equipment whether permanent or temporary. Do not place material or construction equipment within 10 feet (3 m) of hydrants or connection, nor between them and centre line of the street.

Maintain free access at all times to control valves and hose on fire lines within building and to all portable extinguishers.

9. Install fire doors and put into operating condition at the earliest possible time.

8. FROST PROTECTION

1. Provide proper frost protection, including heating for materials to ensure scheduling of work without delay.
2. Work or materials damaged by frost shall be replaced by Contractor.

3. Snow and ice shall not be allowed to remain on any part of the structure, except finished roofs, and shall be removed by the Contractor.

9. ADJACENT BUILDING

1. Particular attention shall be paid to prevention of fire and elimination of fire hazards which would endanger new work or existing property.
2. No existing footings, foundations, pipe lines, electrical conduit and wiring shall be undermined or otherwise damaged or endangered by any operation in the performance of the Work of this Contract. Any existing work so affected shall be immediately repaired and made good to the Consultant's satisfaction at the Contractor's expense.
3. Active services to adjacent buildings shall be protected. In case of damage to active services, notify Owner, Consultant, Utilities and Authorities immediately and make all required repairs under direction of appropriate utility. Carry out repairs during off hours if required.

10. SCAFFOLDING

1. The Contractor shall provide at their own expense all manner of materials, labour, scaffolding, ladders, hand tools, and appliances necessary for the due execution and proper completion of work described herein, unless otherwise specified in tender specifications.
2. Erect scaffolding independent of walls. Use scaffolding so as to interfere as little as possible with other trades. When not in use, move scaffolding as necessary to permit installation of other work. Construct and maintain scaffolding in rigid, secure and safe manner. Remove scaffolding promptly when no longer required. Scaffolding must comply to Occupational Health and Safety Act.

11. PROTECTION AND MAKING GOOD

1. Protect existing property, adjacent public and private property and work of other sections from damage while doing work.
2. Damaged work and property shall be made good (includes replacing, fixing, re-finishing) wherever possible by those performing work originally, but at expense of those causing damage. The Contractor is solely responsible for all subtrades and any damage.
3. Attach and fasten fixtures and fittings in place in safe, sturdy, secure manner so that they cannot work loose or fall or shift out of position during occupancy of building as a result of vibration or other causes in normal use of building.
4. If, during work, any buildings, curbs, walks, roads or landscaping are damaged, repair or replace them to the satisfaction of Consultant and the Owner at no additional cost to the Owner.
5. Protect glass and other finishes against heat, slag and weld spatter, by erecting sturdy plywood or other heavy shields.
6. If tape or strippable coatings are used to protect finished metal surfaces, do not allow them to become baked on or to thermoset.

END OF SECTION

1. AUTHORITIES

1. Where reference is made to authorities or jurisdictional authorities, it shall mean all authorities who have within their constituted powers the right to enforce the laws of the place of building.

2. ACCEPTANCE OF WORK

1. Wherever in this Specification it is specified that work is to proceed or to meet acceptance of jurisdictional authorities, Consultant, or others, such acceptance shall be in writing.

3. FIRE PREVENTION AND SAFETY

1. The Contractor shall enforce fire protection methods of good housekeeping, and adherence to local and underwriter's fire regulations. The Contractor shall provide UL or ULC approved fire extinguishers, and other firefighting services and equipment except where more explicit requirements are specified.
2. Maintain clear emergency exit paths for personnel at all times.
3. Use only fire-resistant tarpaulins and similar protective covering on site.
4. Store volatile waste in closed containers and remove them from premises daily.
5. Store highly combustible or volatile materials separately from other materials and, under no circumstances, within the building. Limit volume of supply on the site to minimum required for 1 day's operations.

4. FIRE PROTECTION OF STRUCTURE

1. Ensure that nothing subverts the integrity of fire protection provided for the building structure.
2. Coordinate work of all trades so that they do not encroach on space required for fire protection and its installation. Ensure that fire protection damaged during construction is completely replaced.

5. FIRE SEPARATIONS

1. Ensure that fire separations are installed to maintain total integrity and that they are not breached by work following their installation.
2. Replace fire separations which have suffered a lessening of their required rating during construction.

6. REFERENCE STANDARDS

1. Unless the edition date is specified, consider that reference to manufacturers, and published codes, standards, and specifications are made to the latest edition (revision) approved by the issuing organization, current at the date of this Specification.
2. Reference standards and specifications are quoted in this Specification to establish minimum standards. Quality of work which exceeds these minimum standards will be acceptable.
3. Should the Contract Documents conflict with specified reference standards or specifications, the General Conditions of the Contract shall govern.

4. Have a copy of each code, standard, and specification to which reference is made in this Specification, always available at construction site.

7. QUALITY ASSURANCE

1. Workers, Suppliers and Subcontractors:
 1. Subcontractors, their suppliers and workers performing work shall be completely familiar with the Drawings and Specifications for the work and shall have complete knowledge of jurisdictional requirements and reference standards as it affects their work.
 2. Where cost, availability, skill and experience permit, give preference to local workers, suppliers and Subcontractors for the Work.
 3. Workmanship shall be the best quality, executed by workers experienced and skilled in the respective duties for which they are employed. Immediately notify the Consultant if required Work is such as to make it impractical to produce required results.
2. Site Superintendent:
 1. Provide a well-qualified and competent site superintendent who shall have complete charge of the work at the site, under the Contractor's directions, and who shall devote their full time to this project from commencement until completion of the Contract.
 2. The site superintendent shall be acceptable to the Consultant and Owner. If for any reason the Owner or Consultant should require the site superintendent replaced, the Contractor shall immediately on request, replace them with another site superintendent to the Owner's and Consultant's acceptance.
 3. Provide in addition, such other superintendents as necessary to direct and control the work on the site, including supervision of the work of all trades. Such personnel shall be well experienced, competent in their specialized fields, and shall have full knowledge and experience in directing the work under their charge.

8. WHMIS REQUIREMENTS

1. Workers shall be familiar with the Workplace Hazardous Materials Information System (WHMIS) which require the uniform labelling of all Hazardous Workplace Materials and Safety Data Sheets relating to all materials covered in this specification. Contractor shall ensure that all employees and subcontractors representing their firm who work with, or in proximity to, hazardous materials fully understand all potential hazards and have been thoroughly trained to deal with any emergencies.
2. All workers shall be able to:
 1. Recognize and understand the labelling on hazardous materials. Understand Materials and Safety Data Sheets and are knowledgeable on how to safely use, store, handle and dispose of hazardous materials.
 2. Contractor shall ensure all Safety Data Sheets (S.D.S.) pertinent to the completion of this project are on site. The Contractor shall supply three copies of all SDS sheets for the project in a 3-ring binder prior to the start of the Project.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.

1.2 APPOINTMENT AND PAYMENT OF INSPECTION COMPANIES

1. Inspection and testing companies for various trades will be appointed by the Consultant where specifically stated or required.
2. The cost of inspection and testing will be paid out of an allowance provided under Section 01020. Where tests or inspections reveal work not in accordance with the Contract, the Contractor shall bear the cost of such tests and additional tests as the Consultant requires to verify the acceptability of corrected work.

1.3 QUALIFICATIONS

1. Companies engaged for inspection and testing shall provide equipment, methods of recording and evaluation, and knowledgeable personnel to conduct tests precisely as specified in reference standards.
2. Companies engaged for testing concrete shall be qualified under CSA A283-06 (R2011), Qualification Code for Concrete Testing Laboratories.
3. Companies engaged for inspection of welds in steel structures shall be qualified under CSA W178.1-08, Certification of Welding Inspection Organizations.
4. Inspectors engaged by inspection companies for the purpose of inspecting welds in steel structures shall be Certified Welding Inspectors in accordance with requirements of CSA W178.2-08, Certification of Welding Inspectors.

1.4 REFERENCE STANDARDS

1. Perform inspection and testing in accordance with standards quoted and as required by procedures specified in reference standards specified in Specification Sections applicable to the work being inspected and tested.

1.5 INSPECTION AND TESTING REPORTS

1. Submit inspection and testing reports in accordance with Section 01300.
2. Submit inspection and testing reports to the Consultant, the Contractor, the Owner, and jurisdictional authorities where they require such reports.

1.6 RESPONSIBILITIES OF THE CONSULTANT

1. The Owner and the Consultant will decide upon any actions that may be required as a result of inspections and tests.
2. Only the Consultant shall be responsible for rejection of work indicated as defective by inspection and testing reports.

3. The Consultant will provide to the contractor Drawings and Specifications in accordance with GC 1.1 of CCDC 2, 2020 and as revised in the City of Brantford Supplementary Conditions. The Contractor will issue required documentation as required to inspection and testing companies.

1.7 RESPONSIBILITIES OF THE CONTRACTOR

1. Inspection and testing is specified as a precaution against oversight or error in performance of work. It shall not relieve the Contractor from responsibility of performing their work in accordance with the Specifications.
2. Provide access for inspection and testing personnel to work in progress and to fabricator's operations.
3. Provide samples of materials to be tested in required quantities at locations testing is performed.
4. Submit copies of mill test reports in accordance with Section 01300.
5. Provide labour and facilities for:
 1. Assistance to facilitate inspections and tests.
 2. Storing of concrete specimens at required temperature and free from vibration, in conformance with reference standard and inspection and testing company instructions.
 3. Obtaining and handling of samples at site and plant.
 4. Provide a slump cone on site and make available to the Structural Engineer or inspection and testing company as required.
6. Notify the Consultant and the inspection/testing company at least 48 hours before work to be inspected and tested commences.
7. When it is discovered on inspection that work is proceeding with incorrect materials or methods, ensure that corrections are immediately made and that work improperly completed is replaced.

1.8 RESPONSIBILITIES OF THE TESTING AND INSPECTION COMPANIES

1. Determine from Specifications and Drawings and in discussions with the Consultant the extent of inspection and testing work required of Contract. Notify the Consultant of any omissions or discrepancies in the work specified.
2. Perform applicable inspection and testing work described in the specification and as may be additionally directed by the Consultant.
3. Provide competent inspection and testing personnel when notified by the Contractor. Inspection personnel shall cooperate with the Consultant and Contractor to expedite the work.
4. Inform the Consultant of each visit of inspection personnel to the work site and fabricator's operations.

5. Notify the Consultant and Contractor of deficiencies and irregularities in work immediately when they are observed in course of inspections and tests, followed by written confirmation.
6. Inspection and testing companies shall not perform any of the Contractor's work, and shall not authorize:
 - Performance of Work that is not in strict accordance with the Contract Documents.
 - Approval or acceptance of any part of the work.
7. Each testing company shall comply with the requirements of the commissioning sections of this specification.

1.9 INSPECTION AND TESTING PROCEDURES

1. Perform specified inspection and testing only in accordance with specified reference standards, or as approved by the Consultant.
2. Observe and report on compliance of Work to requirements of Contract Documents.
3. Ensure that inspectors are on site or at fabricator's operations for full duration of critical operations, and as otherwise required to determine that work is being performed in accordance with the Contract Documents as determined by the Consultant.
4. Identify samples.
5. Identify sources of materials.
6. Review and report on progress of work. Report on count of units fabricated and inspected at fabricator's operations.
7. Observe and report on conditions of significance to work in progress at time of inspection or at fabricator's operations. Include where applicable and if critical to work in progress:
 - Time and date of inspection.
 - Temperature of air, materials, and adjacent surfaces.
 - Humidity of air, and moisture content of materials and adjacent materials.
 - Presence of sunlight, wind, rain, snow, and other weather conditions.
 - Name of person performing sampling, inspection, or testing.

1.10 DEFECTIVE WORK

1. Defective work discovered before expiration of the warranty period specified in the General Conditions of the Contract, as may be extended in this Specification, shall be rejected, whether or not it has been previously inspected.

END OF SECTION

1. TEMPORARY DRAINS

1. Excavations and building site shall be kept free from water at all times by means of trenches to sewers or pits from which it shall be pumped away and disposed from the Site.

2. TEMPORARY WATER SERVICE

1. The General Contractor shall provide and pay for all temporary water and connections for water used for construction operations until the building is complete and turned over to the Owner. The Contractor will pay for the supply cost from the local municipality. Water for compaction and watering of sod shall be trucked to the site and paid by for the General Contractor.

3. TEMPORARY ELECTRICAL SERVICE

1. The General Contractor shall pay for all temporary light and power necessary to the operations under this contract, including all connections necessary to supply to the subcontractors on site. The Contractor will pay for the cost of electrical power supply from the local P.U.C. utility only.

4. TEMPORARY HEATING

1. Provide temporary heat, heating equipment, and shelter, to keep that work which requires protection from cold, adequately warm and sheltered from elements. Maintain minimum temperature of 16 degrees Celsius (60 degrees F.) when finishing work is being done and when building is closed in, until completion of work. Provide heating for materials affected by cold, both in storage and during construction.
2. Do not use salamanders. Use temporary heaters of forced warm air or radiant panel type, operated in well-ventilated location and vented to exterior. Provide protection on floors and adjacent surfaces to prevent damage to floors and adjacent surfaces, particularly when re-fuelling.

5. TEMPORARY USE OF PERMANENT HEATING SYSTEM

1. Permanent heating and ventilation system may be used for temporary heating and ventilation only if the Consultant gives approval to do so in writing, and when piping is complete, all units are connected, all pumps and valves are installed and operating properly, all strainers are installed and permanent or temporary filters are installed, and entire system has been tested and is in safe operating condition, and when no further shut-down of system will be necessary for the Work. Neither the Owner nor the Consultant are under any obligation to grant permission to the Contractor to use the permanent heating system during the construction period.
2. Do not use air distribution system until permanent or temporary filters are in place. Filter air distribution system to prevent dirt and dust from entering units via return air. Keep unused ducts sealed to prevent entry of air. Replace or clean filters frequently during construction to minimize entry of dirt. Clean or replace filters before turning over system to Owner.
3. Put system in charge of fully trained and experienced operator at all times. If required, operators shall be selected jointly by Owner and Contractor with a view to permanent employment by Owner upon completion. Operators shall qualify as set out in Operating Engineers Act, if applicable.

4. Clean, maintain and repair heating and ventilation system as required throughout its use during construction. Notify manufacturer and Consultant immediately before turning over new heating equipment to Owner so that heating items may be checked for possible damage during temporary heating period. Make good any damage to heating and air distribution equipment. Replace all worn parts and turn over system to Owner in clean, new condition, operating with circulating and properly treated water.
5. Permission might be given by the Consultant in writing only upon 100% operation completeness of the systems. Neither the Owner nor the Consultant are under any obligation to grant permission to use permanent heating system during construction period.

6. TEMPORARY SERVICE ROADS

1. The Contractor shall construct and maintain in good condition, such temporary service roads and culverts that may be necessary to provide safe, convenient and adequate access for materials, and other supplies at all times while the General Contractor is working on site. The Contractor shall protect existing roads, sidewalks, curbs and provide mud mats to the satisfaction of the Authorities and replace any that become damaged due to any operations under this contract.

7. FIELD OFFICE

1. Field Office: General Contractor to provide field office at site for Contractor's and Consultants' use. Provide janitor service for periodic dusting, cleaning, and removal of rubbish. Include construction and operating hardware, with security locks, as required. Locate office where directed by Owner and Consultant.
2. Storage Area: General Contractor to provide storage area at site for products and tools. Include construction and operating hardware, with security locks, as required. Separate storage for painter's materials and tools from other storage areas. Locate storage area where directed by Owner and Consultant and provide security.

8. WASHROOM CONVENIENCES

1. General Contractor to provide washroom facilities as per the Construction Health and Safety Act for use of subcontractors and employees. Facilities shall be provided with a screen and contents shall be removed regularly during construction. Maintain it without offense to neighbourhood. At completion of Work, washroom facilities and contents shall be removed and the ground carefully levelled and cleared. Washroom conveniences shall satisfy requirements of the local Health Authority. Location of washroom facilities to be directed by Owner.
2. Use of permanent toilets is forbidden.

9. TEMPORARY STORAGE SHED

1. Provide and erect where directed, weathertight shed of suitable size, with loose plank floor at least 12" off ground for storage of cement and lime. Contractors and subcontractors shall provide their own workshops and storage sheds for entire length of construction. At no time may existing buildings or new additions be used for storage of materials.

END OF SECTION

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

1. Safety measures
2. Fire protection
3. Overloading precautions
4. Falsework
5. Scaffolding

1.2 CONSTRUCTION SAFETY MEASURES

1. Observe and enforce construction safety measures required by National Building Code (Part 8) and Ontario Building Code (latest edition as currently amended), Provincial Government, Workplace Safety and Insurance Board and municipal statutes and authorities.
2. In particular, the Ontario Construction Safety Act, the regulations of the Ontario Department of Labour and Ontario Hydro Safety Requirements shall be strictly enforced.
3. In the event of conflict between any provisions of above authorities, the most stringent provisions will apply.

1.3 SAFETY DATA SHEETS

1. Submit Safety Data Sheets (SDS) for any product to be used, installed or applied inside of the building if said product may emit toxic fumes and/or noxious odours.
2. Submit SDS for any product which is known to or suspected of creating a health hazard or discomfort when used in confined spaces, including but not limited to the following:
 1. Adhesives
 2. Solvents
 3. Sealants (Caulking, etc.)
 4. Other products which may give off air borne particles after installation
 5. Any other product as direct by Consultant.
3. The required Safety Data Sheets to be submitted prior to ordering material or product for use as a part of the Work.
4. The Owner may withhold payment for work of a subtrade or section until SDS for products supplied by that subtrade or Section have been submitted, reviewed by Consultant and found to be acceptable.
5. Refer to Section 01770 – Contract Close-Out for requirements regarding Certificates of Compliance.

1.4 MATERIALS SPECIFICALLY EXCLUDED

1. Asbestos and/or asbestos - containing products are not permitted. Submit Safety Data

Sheets for any product suspected of containing asbestos if so requested by Consultant. Examples of some materials requiring close scrutiny and/or confirmation include:

1. Transite drainage pipe - whether buried or above grade - not permitted.
2. Insulation and/or jacketting for pipes, ducts, motors, pumps, etc. - not permitted if any asbestos is present.
2. Solder for all piping is to be lead-free. "Lead Free" shall mean solder which contains less than 0.030% of lead when dissolved in fluoroboric and nitric acids and tested by inductively coupled argon plasma atomic emission spectroscopy. Steelbond 281 and Silverbrite are acceptable solder products.

The mechanical contractor shall provide an affidavit signed by the principal of the company, on company letterhead, that all of the solder used on the project was either one of the two acceptable products or that the solder used (identified by brand name) meets or exceeds the testing criteria.

The Owner shall undertake random testing of the soldered joints. Should testing provide that the solder used was not as specified, the Owner may take legal action against the contractor as appropriate.

3. All paint and finish coatings are to be lead and mercury-free. Submit Safety Data Sheets confirming that these products are free of all lead and/or mercury compounds.

1.5 FIRE SAFETY REQUIREMENTS

1. Comply with requirements of the local municipal fire department with respect to continuous fire safety on the job site.
 1. Comply with fire safety requirements of other construction related authorities (Workplace Safety & Insurance Board, Ministry of Labour, construction trade unions, etc.). If more than one authority issues similar requirements, the more stringent shall govern.
 2. The appropriate clauses of the Ontario Building Code relating to fire protection shall be strictly followed.
 3. Provide and maintain free access to temporary or permanent fire hydrants and other fire protection equipment during performance of work required by insurance companies having jurisdiction and governing codes, regulations and by-laws.

1.6 OVERLOADING

1. Ensure no part of Work is subjected to a load which will endanger its safety or cause permanent deformation.

1.7 FALSEWORK

1. Design and construct falsework in accordance with latest issue of CSA S269.1-16.

1.8 SCAFFOLDING

1. Design and construct scaffolding in accordance with latest issue of CSA-S269.2-16.

1.9 LIST OF MINIMUM SAFETY

1. Include all provisions for construction safety such as fences, hoarding along streets, storage provisions facilities, sanitation facilities, fire protection, electrical supply, temporary heat, ventilation, construction equipment with its supports and guards, stairs, platforms, ladders, scaffolds, guardrails, walkway lighting and morality lighting, work around asbestos lead, silica and fumes, all as required by the Construction Safety Act and Regulation, latest edition of the Province of Ontario, as well as all other applicable regulations of Jurisdictional Authorities.

1.10 OWNER SAFETY REQUIREMENTS

1. The Contractor will take all necessary steps to protect personnel (workers, visitors, general public, etc.) and property from any harm during the course of the contract.
 1. All work procedures will be in accordance with Owner legislated standards.
 2. All equipment shall be in safe operating condition and appropriate to the task.
 3. The Contractor shall ensure that only competent personnel are permitted work on site. The Owner shall throughout the term of the contract remove from the site any persons not observing or complying with safety requirements.
 4. The Contractor shall provide competent personnel to implement their safety programs and ensure that the owner's standards and those of the Ontario Health and Safety Act are being complied with.
 5. Plant Services or the Consultant will monitor the site every week to ensure that safety requirements are met and that safety records are properly kept and maintained. Continued disregard for safety standards can cause the contract to be cancelled and the Contractor or subcontractors removed from site.
 6. The Contractor will report to the Owner, Consultant and Jurisdictional Authorities any accident or incident involving Contractor, Owner or public personnel and/or property arising from the Contractor's execution of the Work.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

1. **Scope of Work Description:** Environmental protection requirements consist of, but are not limited to the following factors:
 1. Natural resources including air, water, and land.
 2. Solid waste disposal.
 3. Noise.
 4. Control of designated substances.
 5. The presence of chemical, physical, and biological elements and agents that adversely affect and alter ecological balances.
 6. Degradation of the esthetic use of the environment.
 7. Impact on daily activities such as traffic.
 8. Historical, archaeological, and cultural resources.

1.2 FIRES

1. Open fires and burning of rubbish are not permitted on the site.

1.3 DISPOSAL OF WASTES

1. Do not bury rubbish and waste materials on site.
2. Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.
3. All removal of waste products and debris resulting from the work must be audited and source-separated to comply with the most current version O.Reg 103/94 Industrial, Commercial and Institutional Source Separation Programs under the Environmental Protection Act.

1.4 DRAINAGE

1. Provide temporary drainage and pumping as necessary to keep excavations and site free from water.
2. Do not pump water containing suspended materials into waterways, sewer or drainage systems.
3. Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

1.5 SITE CLEARING AND PLANT PROTECTION

1. Refer to Division 2.

1.6 POLLUTION CONTROL

1. Provide and maintain temporary erosion and pollution control features including mud mats and siltation fences per City of Brantford and Ontario provincial standard details and requirements installed under this contract or previously installed.
2. Control emissions from equipment and plant to local authority emission requirements.

3. Prevent sandblasting and other extraneous materials from contaminating air beyond application area, by providing temporary enclosures.
4. Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

1.7 NOISE CONTROL

1. Adhere to local noise bylaws.
2. Equip vehicles and equipment with efficient noise attenuation devices (mufflers) to minimize noise levels in vicinity of Site.
3. Where necessary, place noise attenuation devices (barriers) around stationery pumps and compressors.

1.8 WASTE MANAGEMENT CONTROL

1. Prepare Waste Audit and Waste Reduction Plans in accordance with O.Reg. 102/94 made under the environmental Protection Act for Waste Audits and Waste Reduction Work Plans. Ensure these plans are prepared prior to construction or demolition work proceeding on site.
2. Prepare and implement a Source Separation Program in accordance with O.Reg. 103/94 made under the environmental Protection Act for Industrial Commercial Source Separation Programs. Ensure program is implemented prior to construction or demolition work proceeding on site.
3. Post plans on site where most workers will see them and allow any worker to view plans who makes such a request.
4. The following set of definitions are intended to augment terms provided within this Section:
 1. 3 R: REDUCE (REDUCTION), REUSE, RECYCLE
 2. REDUCE (REDUCTION) - Reduction involves actions to minimize quantity of waste at source and consequently, assumes highest priority in hierarchy of 3R activities.
 3. REUSE - Direct reuse of products which otherwise would become waste, provides another means of diverting quantity of waste destined for landfill.
 4. RECYCLE - Recycling involves collection of materials for use as feedstock in manufacturing of new products. Recycling can be most effectively accomplished if recyclable materials have been source separated at point of generation.
 5. SOURCE SEPARATION - Purposeful segregation of materials from designated solid waste stream into specific material types at point of generation to facilitate recycling.
 6. SOURCE SEPARATED MATERIALS - Specific types of materials that have been purposefully segregated from municipal waste into specific material types at point of generation.

7. CONSTRUCTION BUSINESS - Business enterprise employing more than 50 persons out of 1 office involved in building, renovation and repair of immobile structures, including soil excavation and landscaping.
8. DEMOLITION BUSINESS - Business enterprise employing more than 50 persons out of 1 office involved in dismantling any immobile structure, facility or dwelling.
5. Apply waste management activities of reduction, reuse and recycling of waste materials during construction and/or renovation of this Contract.
6. Construction / Demolition Businesses shall be required to source separate in accordance with O.Reg. 103/94, for the purposes of recycling, the following materials:
 1. corrugated cardboard
 2. wood waste (i.e. non-treated dimensional lumber, manufactured wood)
 3. non-painted gypsum board
 4. ferrous metals
 5. brick and Portland cement concrete
7. Submit agreement as requested to include source separation of above identified materials and other waste diversion activities during construction phase.
8. Requirements: during construction phase, Contractor shall be required to comply with following program requirements:
 1. Identify sorting, storage and disposal requirements anticipated during construction to maximize waste diversion.
 2. Establish reduction, reuse and on-site source separation activities during construction.
 3. Identify haulers and recycling companies that have entered into agreement with or have expressed willingness to enter into such agreement with Contractor.
 4. Identify person responsible for source separation program.
 5. Establish effective education and information program for on-site employees, including training sessions, use of signs, and designated waste diversion program.
 6. Establish cooperative agreements with Sub-Contractors/trades to abide by waste diversion program.
9. Contractor shall be willing to allow monthly on-site visits by the Consultant to review waste management / recycling program.
10. Immediately upon notification of award of Contract, and before starting work on Site, submit fully completed "Sub-Contractor Participation Form" appended to this Section to the Consultant .
11. Contractors shall provide evidence that they can and shall implement required waste diversion program. Provision of evidence includes, but is not limited to following:

1. Written agreements with Sub-Contractors that they will participate in waste diversion program.
 2. Letters from reuse / recycling markets that they are in position to accept designed materials.
 3. Action plan prepared by Contractor for meeting objectives of waste diversion program.
12. Contract Sum shall include costs for implementing waste diversion program.

1.9 HAZARDOUS MATERIALS

1. See Section 00840 Hazardous Materials.

1.10 EROSION AND SEDIMENT CONTROL

1. Requirements:

1. The Contractor shall be solely responsible for designing and providing all sediment and erosion control measures as may be required to protect the work site or the adjacent lands, regardless of the source or origin of erosion or sediments. If the Consultant is not satisfied with the extent of the measures taken the Consultant may direct that additional controls be put in place.
2. The Consultant's requirements for sediment and erosion control shall be considered absolute minimums. The ultimate responsibility to ensure that the measures are adequate shall lie solely on the Contractor. Any damage resulting from failure of these measures shall be repaired at the Contractor's expense.
3. The scope of Work indicated on the drawings is a suggestion only. The contractor shall remain responsible to determine the extent of the work required in accordance with this specification.
4. Conform to the requirements of O.P.S.S. 577, Construction Specifications for Temporary Erosion and Sediment Control Measures.
5. Conform to the requirements of the local Conservation Authority, the Department of Oceans and Fisheries and the Ministry of Natural Resources and any other agency having jurisdiction.

2. Materials:

1. Materials used for erosion and sediment control shall conform the requirements of O.P.S.S. 577.05.
2. Straw bales shall be approx. 600 mm x 600 mm x 1200 mm and shall consist of wheat or oat straw firmly tied and shall show no evidence of straw or tie decay.
3. Geotextiles shall conform to the requirements of O.P.S.S. 1860 and shall be free from holes, tears or punctures. Geotextiles used as a silt fence shall be woven Class I geotextile, having a width of 1 metre minimum. The filtration opening size shall be 840 um maximum, meeting CAN/CGSB 148.1. Geotextiles used in temporary rock flow checks shall be a woven Class II geotextile with a filtration opening size of 300 um maximum, meeting CAN/CGSB 148.1.

4. Stakes shall be of sufficient strength to retain in position the protection device.
3. Construction Methods:
 1. Conform to the requirements of O.P.S.S. 577.07.
 2. Dewatering effluent shall be controlled to prevent the passage of sediment into the stream. Sediment barriers shall be constructed of straw bales or silt fence barriers. The ends of sediment barriers shall be angled upstream for a distance of 2 metres at each end to direct the runoff to the main portion of the barrier. Place protection against the downstream side at the low point to prevent any overflow of the barrier. Install barriers without gaps and prevent undermining and sediment passage from the upstream side of the barrier to the downstream side.
 3. Install straw bales in 75 mm deep trenches, staked, backfilled and compacted to existing grade.
 4. Install geotextile silt fences in a trench measuring 200 mm deep and 200 mm wide to anchor the geotextile along its entire length. Support silt fence with stakes placed 2.3 metres apart. Attach geotextile to the upstream side of the stakes without sags. The stakes shall extend a minimum of 600 mm into the ground. At splices in the geotextile, overlap fabric 500 mm. The completed silt fence shall have a minimum height of 600 mm above the ground surface.
 5. Construct rock flow checks in accordance with O.P.S.S. 577.07.05.
 6. Monitor all erosion and sediment control measure prior to and following any storm event. Maintain all measures in an effective, functioning and stable condition.
 7. Sediment that has accumulated by sediment barriers shall be removed in a manner that avoids escape to the downstream side of the control device. Sediment shall be removed to the level of the grade existing at the time the device was installed. Sediment shall be removed once it has accumulated to a height of one half the height of the device. Upon completion of the work all remaining sediment shall be removed. Leave in place all sediment control measures until the vegetation has been re-established and there in no further threat of stream contamination.
 8. Completely remove remainder of sediment control devices when directed.

END OF SECTION

SUBCONTRACTOR PARTICIPATION FORM

For source separation program to be effective, it is important for Subcontractors/trades to work cooperatively with your company. To ensure this cooperative arrangement will be carried out, you may wish to ask Subcontractors/trades companies to sign this agreement.

I hereby agree to participate in the source separation program to the best of my abilities.

1.	Company Name	_____
	Address	_____
	Signature	_____
2.	Company Name	_____
	Address	_____
	Signature	_____
3.	Company Name	_____
	Address	_____
	Signature	_____
4.	Company Name	_____
	Address	_____
	Signature	_____

1. ACCEPTABLE PRODUCTS

1. First item named or specified by catalogue number meets specifications in all respects regarding performance, quality of material and workmanship, and is acceptable to the Consultant.
2. Items, other than first named, meeting specifications regarding quality of materials and workmanship only, are acceptable to the Consultant, if they also meet performance, match the first named product in colour and texture, etc. and/or capacities specified and can be accommodated within the space allotted.
3. General approval indicated by inclusion of other manufacturers named is subject to final review of submitted samples of shop drawings, performance data test reports and complete catalogue data along with deviations from the product specified shall be noted.
4. Where the Contractor uses approved equivalent products other than that first named, on which design is based, the Contractor shall be responsible for all details of installation including product size, arrangement, fit, colour, etc. and maintenance of all required clearances. Contractor shall prepare and submit revised layouts to indicate arrangement of all affected piping, ductwork, conduit, lighting, equipment, etc. Failure by Contractor to provide such drawings may be considered indication that additional costs associated with equivalent products such as revisions to surrounding consultantural finishes, structural components, or the need for larger motor starters, larger power feeders, space revisions to associated product equipment, controls, etc. shall be included in Bid price.

2. APPROVAL REQUIRED

1. The Contract is based on the materials, equipment, and methods described in the Contract Documents.
2. The Owner and Consultant will consider proposals for substitution of materials, equipment, and methods only when such proposals are accompanied by full and complete technical data, and all other information required by the Consultant to evaluate the proposed substitution.
3. Do not substitute materials, equipment, or methods unless such substitution has been specifically approved for this work by the Owner and Consultant, in writing.

3. "OR EQUAL"

1. Where the phrase "or equal", "approved equal", or "equal as approved by the Consultant" occurs in the Contract Documents, do not assume that materials, equipment, or methods will be approved by the Consultant.
2. The decision of the Consultant shall be final.

4. AVAILABILITY OF SPECIFIED ITEMS

1. Verify prior to bidding that all specified items will be available in time for installation during orderly and timely progress of the Work.

- 2 Costs of delays because of non-availability of specified items, when such delays could have been avoided by the Contractor, will be back-charged as necessary and shall not be borne by the Owner.

END OF SECTION

1. EXAMINATION

1. Throughout the project, examine the work of all trades and promptly notify the Consultant if any conditions do not or will not comply with the drawings and specifications.

2. DETAILS AND MEASUREMENTS

1. Ensure that necessary job dimensions are taken and trades are coordinated for the proper execution of the work. Assume complete responsibility for the accuracy and completeness of such dimensions, and for co-ordination.
2. Verify that work, as it proceeds, is executed in accordance with dimensions and positions indicated which maintain levels and clearances to adjacent work, as set out by requirements of the drawings, and ensure that work installed in error is rectified before construction continues.
3. Check and verify dimensions referring to work and interfacing of services. Dimensions, when pertaining to work of other trades, shall be verified with trade concerned.
4. Do not scale directly from the drawings. If there is ambiguity or lack of information, immediately inform the Consultant and await instructions before proceeding. Be fully responsible for rectifying, altering or redoing any work resulting from disregarding this clause, at no additional cost to the Owner.
5. All details and measurements of any work which is to fit or to conform with work installed shall be taken at the site.

3. AS-BUILT DRAWINGS

1. As work progresses, maintain accurate records of changes to the drawings and of concealed services. Accurate locations, depth, size, and type of underground utilities shall be included in these as built drawings. The General Contractor will be supplied with clear prints of the floor plans for making these recordings. As built drawings will be reviewed at each site meeting and must be properly maintained to receive Consultant's approval before the monthly certificate draw will be approved.
2. Keep a daily record showing progress of the work and all factors affecting the work, i.e., weather, strikes, accidents, shipping delays, etc.
3. Completed as-built drawings shall be submitted prior to requesting substantial completion.
4. The General Contractor shall also supply record drawings on computer disks in AutoCad 2010 (or later) by a professional drafting service (Contractor may ask the Consultant for digital Autocad files to be supplied to them at no cost for a base drawing to start with). Approval shall be obtained by the Consultant for approval of the professional drafting service.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

1. **Scope of Work Description:** Maintain project site in accordance with the standards and requirements noted in this Section.

1.2 REFERENCES & QUALIFICATIONS

1. Maintain project in accordance with the latest edition of The Occupational Health and Safety Act.

1.3 DUST & CLEANING REQUIREMENTS

1. Hazards & Dust Control:
 1. Provide adequate ventilation during use of volatile or noxious substances.
 2. Prevent spread of dust beyond the construction site by wetting, or by other means suitable for conditions, as it accumulates.
 3. Provide tack mats at entrances to prevent dust and dirt from being traced through the project as required. Dispose of mats and replace on regular basis with new mat.
2. Floors:
 1. Keep troweled concrete floors free from oils, grease or other materials likely to damage, dis-colour or affect bond of applied finishes. Once building is enclosed, keep floors as dry as possible after curing.
 2. To prevent soiling or damage to finish flooring where pedestrian traffic occurs after flooring has been installed, install and maintain reinforced kraft paper as temporary protection, secured in place and with joints sealed by reinforced pressure sensitive tape.
 3. Install plywood panels of minimum ¼" thickness over completed finish flooring materials on which further construction work is performed or delivery of products is made. Seal joints between panels with reinforced pressure sensitive tape.

PART 2 - PRODUCTS

2.1 MATERIALS

1. Use only cleaning materials recommended by manufacturer of surface to be cleaned.
2. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

PART 3 - EXECUTION

3.1 DURING CONSTRUCTION

1. Execute cleaning to ensure that building, grounds, and public properties are maintained free from accumulation of waste materials and rubbish. Keep site clear of snow, mud

and pooling of water due to severe rain. Ensure that work is not stopped because of failure to provide access to site.

2. Wet down dry materials and rubbish to prevent blowing dust.
3. Clean site and public properties and dispose of waste materials, debris and rubbish on a daily basis.
4. Provide on-site containers for collection of waste materials and rubbish. Coordinate location with the Owner and Consultant.
5. Unless otherwise specified, salvaged material resulting from construction, and surplus materials and construction debris shall become property of Contractor, who shall dispose of it away from site.
6. Clean interior building work areas daily or as needed, until work is complete. Promptly as the work proceeds and on completion, each Contractor shall clean up and remove from the premises all rubbish, surplus materials and equipment resulting from their work. Follow General Contractor's instructions regarding disposal of rubbish.
7. Vacuum clean interior building areas when ready to receive finish painting and continue vacuum cleaning on an as-needed basis until building is ready for Substantial Performance or occupancy.
8. Obtain from each Subcontractor, instructions which designate proper methods and materials to be used in final cleaning, and submit such instructions to the Consultant.
9. Handle materials in a controlled manner with as few handlings as possible; do not drop or throw materials from heights.
10. Schedule cleaning operations so that dust and other contaminants resulting from cleaning process will not fall on wet, newly-painted surfaces.

3.2 FINAL CLEANING

1. At completion of Work, remove waste materials, rubbish, tools, equipment, machinery, and surplus materials, and clean all surfaces exposed to view; leave project clean and ready for occupancy.
2. Remove temporary protections and make good defects before commencement of final cleaning.
3. Employ experienced workers, or professional cleaners, for final cleaning.
4. In preparation for Substantial Performance or occupancy, conduct final inspection of interior and exterior surfaces exposed to view, and of concealed spaces.
5. Use only cleaning materials recommended by manufacturer on surface to be cleaned, and as recommended by cleaning material manufacturer.
6. Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials from all sight-exposed interior and exterior finished surfaces; polish resilient and ceramic surfaces so designated to shine finish. Vacuum carpet.

7. Clean and polish glass and mirrors, porcelain, enamel and finish metals, washroom accessories.
8. Repair, patch and touch up marred surfaces to specified finish, to match adjacent surfaces.
9. Broom-clean paved surfaces; rake clean other surfaces of grounds.
10. Clean masonry and concrete, if so directed by the Consultant.
11. Clean wood paneling, millwork and doors.
12. Clean filters, exposed ductwork, and structure.
13. Clean bulbs and lamps and replace those burned out.
14. Clean diffusers and grilles.
15. Clean sinks, faucets, and water closets and controls.
16. Remove snow and ice from access to building.
17. Maintain cleaning until project, or portion thereof, is occupied by Owner.

3.3 REMOVAL OF TEMPORARY FACILITIES

1. Completely remove temporary facilities from site, making good any damage when no longer required.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

1. Scope of Work Description:

1. Provide all the following as part of this project as listed in this specification section.
2. The direct list below are requirements for occupancy along with all other requirements for occupancy as per OBC Division C, Part 1, Subsection 1.3.3.
 1. Systems demonstration – Contractor and sub-trades
 2. Document submission – Maintenance, User and Service Manuals / As Builts - Contractor
 3. Project Commissioning - Contractor
 4. Inspection and takeover procedures - Contractor
 5. ESA Certificate of Acceptance – Building
 6. Emergency Lighting Test Report / Letter – from sub-trade on letterhead.
 7. Emergency Exit Sign Test Report / Letter – from sub-trade on letterhead.
 8. Fire Alarm System Inspection Certificate

1.2 SYSTEM DEMONSTRATION

1. Prior to final inspection, demonstrate operation of each system to the Owner and Consultant.

1.3 DOCUMENTS

1. The Contractor will turn over to the Owner and Consultant at the completion of the Contract all project close-out documents, material, etc. These documents, material, etc. including occupancy permit, will be accepted only with a transmittal and at no other time than when submitting a written request for substantial performance of the contract. For purposes of determining a value of this work it will be considered as **\$10,000**.
2. Collect reviewed submittals in Section 01010 and 01300 and assemble documents executed by Subcontractors, suppliers, and manufacturers.
3. Provide bonds fully executed and notarized.
4. Submit a final statement of accounting giving total adjusted Contract Sum, previous payments, and monies remaining due.
5. Consultant will issue a final change order reflecting approved adjustments to Contract Sum not previously made.

1.4 PROJECT COMMISSIONING

1. Expedite and complete deficiencies and defects identified by the Owner and Consultant.
2. Review record "as-built" drawings for completeness and submit dwg. files of as-built drawings in AutoCAD 2010 or later.
3. Submit required documentation such as statutory declarations, Workplace Safety & Insurance Board Certificates, certificates of approval or acceptance from regulating bodies.

4. Attend "end-of-work" testing and break-in or start-up demonstrations.
5. Review inspection and testing reports to verify conformance to the intent of the documents and that changes, repairs or replacements have been completed.
6. Meet with structural consultant and inspection / testing consultant to co-ordinate completion of testing approvals.
7. All utility meters to be read and transferred into the Owner's name.

1.5 INSPECTION / TAKEOVER PROCEDURES

1. The requirements of OAA/OGCA Document No. 100 "Take-Over Procedures" also govern applicable take-over procedures for this Contract.
2. Prior to application for certificate of Substantial Performance, carefully inspect the Work and ensure it is complete, that major and minor construction deficiencies are complete and/or corrected and the building is clean and in condition for occupancy. Notify the Consultant, in writing, of satisfactory completion of the Work and request an inspection. Substantial Performance cannot be applied for until the building is approved for occupancy by the local building authority, and the percentage of completion as per the Construction Act has been obtained.
3. During the Consultant's reviews, lists of deficiencies and defects will be tabulated. Correct same.
4. When the Consultants consider deficiencies and defects have been corrected and it appears requirements of the Contract have been performed, make application for certificate of Substantial Performance.

END OF SECTION

1.1 ONTARIO PROVINCIAL STANDARD SPECIFICATIONS AND DRAWINGS

1. The Ontario Provincial Standard Specifications, referred to herein form part of this specification and are as binding on the contractor engaged to carry out the work as are the Special Provisions. Where there is a difference between the requirements of the OPSS documents and the Special Provisions, the Special Provisions shall govern.
2. All OPSS Material Specifications and OPSD Standard Drawings which are referred to in these specifications, also form part of this specification and are as binding on the contractor engaged to carry out the work as are Special Provisions.
3. The contractor will be responsible for obtaining copies of the OPSS Specifications and Standard Drawings referred to herein and shall be governed by the relevant clauses and/or sections applicable to the work. A list of OPSS Specifications and Standard Drawings that apply to the work are included in this specification.
4. It is noted that some of the referenced OPSS have been replaced or reorganized within various volumes of OPS documents. In all cases where this occurs, the document directed to by the OPS shall apply. In some cases the document is directed to a provincially orientated version and also a municipally orientated version. In these cases the municipally orientated version shall apply

1.2 EXISTING UTILITIES

1. The provision of OPSS.MUNI 491 shall apply except that:
2. The locations of existing sewers, watermains, gas mains bell telephone, hydro and all other utilities as shown on the drawings are for general information only. It is the Contractor's responsibility to verify that completeness of this information.
3. The Contractor is cautioned that all of the existing utilities are not indicated on the drawings. The Contractor must arrange for locates through Ontario One Call from each area utility company prior to any construction or excavation. The Contractor shall be solely responsible for the protection and support of all utilities including those not indicated on the drawings. The existing utility locations shown on the drawings have been provided by the area utility companies therefore G. Douglas Vallee Limited or the Owner cannot accept responsibility for damage to any existing utility which may or may not be indicated on the drawings.
4. Where connection to existing infrastructure is required, the Contractor shall expose the infrastructure and confirm actual connection invert with the Owner and Consultant before any work is completed.

1.3 DUST CONTROL

The provisions of OPSS.MUNI 506 shall apply except that:

1. Dust control shall be the sole responsibility of the Contractor. The Contractor shall be solely responsible for any damage or claim as the result of dust, and the Contractor shall hold harmless the Owner from any such claims. The Owner or Consultant may direct the Contractor to increase the dust control measures. If the Contractor fails to control dust to the satisfaction of the Owner or Consultant, then the Owner or Consultant may take steps required to control the dust, and the cost of such control shall be deducted from payment due to the Contractor under this contract.
2. Dust control shall be achieved with water and calcium chloride in the form of loose dry flakes at a minimum.

1.4 TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES

The provisions of OPSS.MUNI 805 shall apply, except that:

1. The design, installation, and maintenance of the erosion and sediment control measures shall be the responsibility of the Contractor. The Contractor shall ensure that the measures perform to the satisfaction of the Consultant, Conservation Authority, and the Owner. Any damage caused by the failure of the Contractor's measures shall be the sole responsibility of the Contractor, he shall pay all costs and expenses to correct and repair any such damage. The Contractor shall hold harmless the Owner and the Consultant from any and all claims relating to damage from erosion and sediment regardless of the source or cause of the damage.

1.5 MATERIALS TESTING

The Contractor shall retain the services of a materials testing firm accredited by the Canadian Council of Independent Laboratories (CCIL) to perform all materials testing as specified. Where tests or inspections by designated testing laboratory reveal work not in accordance with the contract requirements, the Contractor shall pay costs for additional tests or inspections as Consultant may require to verify acceptability of corrected work.

The Contractor shall provide all mix designs in advance of scheduled activities to confirm conformance with the specifications. The Contractor shall pay costs for uncovering and making good work that is covered before required inspection or testing is completed and approved by Consultant. The contractor is to provide all test results to the Consultant and make available all test results as requested.

ASPHALT TESTING

Sufficient samples shall be taken so that the overall sample is representative of the loads received that day.

Asphalt temperature:	each load
Ambient temperature:	start of paving and end of paving
Marshall:	1 per day per mix specified
Extraction:	1 per day per mix specified

GRANULAR TESTING

Samples shall be taken at the source and gradation checked prior to delivery.

COMPACTION TESTING

Trench backfill:	minimum of one every pipe run
Subgrade:	minimum of 10 test over the parking area
Granular Base/Bedding:	minimum of 20 test over the parking area
Asphalt:	minimum of 10 test over the parking area

1.6 SURVEY AND LAYOUT

1. The Contractor shall complete all layout for the completion of the works.

2. Where applicable the Contractor will set hubs and marker stakes at 20m stations on either side of the street allowance for vertical and horizontal control.
3. The Contractor shall be responsible for all additional layout which will include the installation of stakes, offsets, batter boards, site rails etc.
4. The Contractor shall report all grades and report any discrepancies or concerns to the Consultant prior to construction.
5. The contractor shall verify the bench marks indicated on the plans prior to construction and shall notify the Consultant of any discrepancies in elevation.
6. The contractor shall be responsible for the correctness of the position, levels, dimensions, and alignment of the work and for the provision of necessary instruments and labour in connection therewith.
7. Checking of the setting out of line or level by the Consultant does not relieve the contractor of his responsibility for the correctness thereof.
8. The contractor shall carefully protect and preserve stakes, lot pins, legal survey bars, marks and reference points and replace them if destroyed or removed.

1.7 AGGREGATES

1. References to Granular "A" shall mean Granular "A" as defined by OPSS 1010, with the exception that the material be 100% crushed limestone.
2. References to Granular "B" shall mean Granular "B" Type II, as defined by OPSS 1010, with the exception that the material be 100% crushed limestone.
3. Granular "A" and Granular "B" shall not be placed until the base has been inspected and approved by the Consultant.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. The attached Reports - Geotechnical Engineering Reports – *Geotechnical Engineering Report – Storage Building WGGC, Geotechnical Investigation Report – Cart Storage WGGC, dated the 26th of August, 2022.*
3. This information given in these reports was obtained for the use of the Owner in the execution of the design. It is presented in good faith to assist the Contractors and their subcontractors.
4. Any information pertaining to soils, and borehole logs are furnished by the Engineer as a matter of general information and borehole descriptions of logs are not to be interpreted as descriptive of conditions at locations other than those described by the boreholes themselves.
5. It is incumbent upon the Contractors to make whatever additional soils investigation they feel may be required for the proper execution of the Contract at no additional cost to the Owner.
6. The Excavation, Trenching and Backfilling Section 02220 and Earthwork Below Paving-Section 02215 Specifications are not intended to override the attached soil report. All work outlined in Sections 02220 and 02215 shall be performed.
7. Examine the conditions on the site and present site conditions.

END OF SECTION

ART 1 – GENERAL

1.1 **SUMMARY**

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. The Work of this Section shall consist of furnishing labour, material, tools, equipment and special services necessary to complete all demolition work as indicated on the demolition drawings, as specified, and as required to fulfill all other aspects of the new construction work, including but not limited to: fencing and footings, asphalt paving, curbs, sidewalks, permeable pavers and sub-bases as required, landscaping plantings and raised beds, granular below surface finishes as required, below grade sanitary and storm services including gas and water lines. Note this also includes the cost of all demolition permits required to do the work.
 2. Drawings and notes are intended to convey the general intent of demolition and removal required for the work of this Contract but are not intended to highlight or point out every element requiring demolition or removal. Contractor is to review drawings and specifications which indicate the required finished project and perform the demolition required to allow the indicated changes and/or construction to take place.

1.2 **REFERENCES & QUALIFICATIONS**

1. Conform to the latest Ontario Building Code, the Construction Safety Act, Local Bylaws and Ontario Ministry of Labour, all as currently amended. In case of conflict between Codes, the Ontario Building Code will govern.

1.3 **SUBMITTALS**

1. Provide submittals in accordance with Section 01300 – Submittals.
2. Where required by authorities having jurisdiction, submit Engineered drawings, diagrams of details showing sequence of dismantling work and shoring of structures during demolition.
3. Drawings for structural elements shall bear signed professional seal of Structural Engineer licensed to practice in Ontario.
4. Submit the following for removal of any underground tanks in accordance with Section 01300 Submittals:
 1. All test reports required by Federal, Provincial and Municipal authorities and regulatory agencies.
 2. Inspection permits.

1.4 **DELIVERY & STORAGE**

1. Arrange for early deliveries necessary for execution of work without delay and have materials on job well in advance of the time it is needed to avoid construction delays. Extensions to the contract will not be granted if delay is due to materials not being on site in a timely manner.
2. Deliver, store and handle materials to exclude foreign material and prevent damage, soiling or breakage.
3. Delivery to the job site shall be coordinated by the General Contractor.
4. Materials stored on site which need to be protected from weather shall be so protected. Damaged materials are not to be used and the Owner will not be responsible for additional costs to replace any damaged materials.
5. Storage of any material on or off the site is the responsibility of the contractor.

1.5 **SPECIAL PROTECTION**

1. Provide adequate protection of materials and work of this Section from damage by on site storage, weather, construction activities and other causes.
2. Protect the work of other sections from damage resulting from work of this section and protect the work of this section from damage resulting from work of other sections. Make good such damage to the satisfaction of the Owner and Consultant.
3. Contractor to exercise protective treatment and other precautions required through the construction period, to ensure that items listed will be without damage or deterioration other than normal weathering and wear.
4. If items are damaged / soiled as noted above, items are to be replaced / repaired at contractor's expense, not extra cost to the contract.
5. Consult with section of work soiled before cleaning to ensure methods used will not damage their work.
6. All patching and repair due to damage by other trades, shall be performed under this section and paid for by the trade responsible for the damage.

1.6 **SEQUENCING & SCHEDULING**

1. Pre- Demolition Meeting:
 1. Prior to start of work, arrange for Site meeting of all parties associated with the work of this Section. Presided by the Owner and Consultant, meeting shall include the Demolition Contractor, Abatement Contractor, Hazardous subcontractor(s), Testing Company Representative, Site Servicing Engineer and Structural Engineer.
 2. Review Specification for work included under this Section and determine complete understanding of requirements and responsibilities relative to work included, storage and handling of materials, methods to be used, sequence and quality control, project staffing, restrictions due to environmental protection requirements and other matters affecting demolition, to permit compliance with intent of this Section.

2. Ensure all work is installed and completed that will be concealed by this work.
3. The Contractor shall cooperate in the coordination and scheduling of the product to avoid delays in job progress.
4. Coordinate the Work of this Section with the work of all other Sections in accordance with the General Instructions and to ensure proper sequencing and the safety and stability of the structure at all times.
5. Coordinate demolition work with the Owner and Consultant prior to proceeding.
6. Construction phasing sequences and when areas of the existing site can have demolition work done to be approved by Consultant and Owner.
7. Permits:
 1. Obtain and pay for all necessary Municipal and other permits required to carry out the work of this section.

1.7 **PROJECT SITE CONDITIONS**

1. Carefully examine the site to ensure that all factors concerning demolition of site elements at areas 1500mm beyond existing building perimeters are known, particularly those concerning:
 1. Existing equipment and/or materials which are to be turned over to the Owner.
 2. Nature and extent of existing materials to be demolished or removed.

PART 2 - PRODUCTS

2.1 **MATERIALS**

1. All demolished materials become the Contractor's property and the Contractor must remove them from the site except for any specific items to be retained for re-use or turned over to the Owner. Coordinate turn over with the Owner. Store items on site as directed by the Owner. Exterior placement shall be on wood skids and covered weather tight from the elements. A list of these items if any will be provided at the bidders conference / site meeting on site during the bid period and are also noted as salvaging materials / items in the demolition drawings.
2. Remove contaminated and dangerous material from Site and dispose of in a safe manner according to regulations of authorities having jurisdiction to minimize danger involved at Site or anytime during disposal.
3. Conform to requirements of Section 00840 Hazardous Materials, Section 01560 Environmental Protection Requirements for any hazardous materials removals.

PART 3 - EXECUTION

3.1 **PROTECTION**

1. Protect adjacent property against damages which might occur from falling debris or other

causes. Do not interfere with use of adjacent buildings and maintain free, safe passage to and from same.

2. Take precautions to guard against movement or settlement of adjacent buildings; provide and place bracing or shoring; be responsible for safety and support of such buildings; be liable for any such movement or settlement, any damage or injury caused thereby or resulting there from. If at any time, safety of any adjacent structure or buildings appear to be endangered, cease operations, notify the Consultant; take precautions to support such buildings; do not resume operations until permission has been granted. If such movement or settlement of adjacent buildings is caused by negligence or default of this Contractor, they shall install sufficient bracing or shoring with no extra cost to the Owner. If Consultant considers additional bracing or shoring necessary to safeguard, prevent such movement or settlement, install bracing or shoring upon Consultant's order; if Contractor fails to comply promptly with such order, such bracing, shoring may be placed by Consultant, at Contractor's expense.
3. In general, existing masonry walls above grade require structural lateral supports at vertical or horizontal intervals not exceeding 20 times the thickness of the masonry.
4. This Trade Contractor is responsible for the design and installation of all necessary bracing or shoring for the superstructure for all phases of the demolition.

3.2 **WORKMANSHIP**

1. Demolition shall be carried out in strict accordance with provincial, local and municipal authorities and the Ontario Building Code.
2. During demolition operations, keep work dampened down to prevent dust and dirt rising.
3. Do not remove present work, where such removal may endanger the structure or mechanical and electrical functions, where such are to remain. All doubtful instances shall be brought to the Consultant's attention before commencement of the Work.
4. Saw cut or otherwise neatly form, junction between construction being removed and that which remains.
5. Rerouting of existing services which occur in or at the building shall be done by Mechanical and Electrical and Site Services Trade Contractors
6. All mechanical and electrical devices will be disconnected and removed by the licensed electricians and plumbers.
7. If during demolition work hazardous material other than specified to be removed is discovered then stop work in the affected area and immediately notify Consultant.
8. Remove contaminated or dangerous and hazardous materials from site and dispose of in safe manner to minimize danger at site or during disposal. Comply with all regulations and by-laws of Municipal and Provincial Authorities having jurisdiction. Separate and recycle all building materials that are recyclable, see Section 01560 Environmental Protection Requirements. Provide separate bins for each recyclable material.
9. Dispose of demolished materials except where noted otherwise and in accordance with authorities having jurisdiction.

10. At end of each day's work, leave work in safe condition so that no part is in danger of toppling or falling or unprotected excavations are exposed.
11. Demolish masonry and concrete walls in small sections. Carefully remove and lower structural framing and other heavy or large objects.
12. Do not sell or burn materials on site.
13. Materials and debris shall not be stacked in building to extent that overloading of any part of structure will occur.
14. Contractor is to plan and bid the work of this contract as a demolition project. As such, the Contractor must allow for removal and demolition of items which are not fully visible during the bidding phase. It is not possible to indicate all specific items requiring demolition on the drawings.
15. Contractor to allow for cutting, patching, holes, sealing of existing openings which will be required to accomplish the construction work indicated.
16. Hand and mechanical demolition shall be acceptable methods for work of this Section. Verify with Consultant whether proposed methods of demolition are acceptable. The use of rapid progress failure methods of demolition (explosives) will not be permitted.
17. Inform Consultant immediately if conditions are encountered during demolition which are significantly beyond those which could have reasonably been anticipated or inferred based upon the Contract Documents and examination of the building prior to commencement of work.

3.3 **EXISTING SERVICES**

1. Provide and maintain temporary services required during demolition to satisfaction of authorities having jurisdiction, fire departments and utility companies.
2. Before commencing demolition, contact Electrical Department of local authority and tour Site with them. Disconnect and seal electrical power lines and communications cables entering buildings to be demolished. Post warning signs on electrical lines and equipment which must remain energized to serve other properties during period of demolition.
3. Disconnect and cap mechanical services in accordance with requirements of local authority having jurisdiction. Natural gas supply lines shall be removed by Gas Company or by qualified tradesman in accordance with Gas Company instructions. Remove and dispose of other existing underground services and mechanical equipment.
4. In event of unexpected discovery of additional buried fuel or other tanks, do no further work and immediately report discovery, orally and in writing to Consultant. Owner and Consultant will authorize remedial work, if any, in writing. Do such remedial work, as addition to Contract.
5. Remove electrical equipment as required by the work.
6. Remove sewer and water lines to extent as required by the work and cap to prevent leakage.

3.4 ADDITIONAL WORK TO BE INCLUDED IN THIS SECTION

1. Coordinate excavation and backfill work with General Contractor. All of this work to conform with Sections 02215 and 02220.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. To perform all the work not done or included in Excavation, Trenching & Backfilling - Section 02220. In general, the work of this section shall include the clearing, grubbing, excavating, engineered fill, backfilling and rough grading for all the asphalt, sidewalk, landscaping, as indicated on the drawings (at all site areas beyond building walls).
 2. Coordinate with Architectural Site Plan, Site Grading, Site Servicing, Landscape Drawings and Existing Topographic Survey which are included to show the existing and final grades.
 3. Final contours are to be maintained as closely as possible with due allowance for "blending" of grades for drainage away from the building.
 4. Refer to Geotechnical Report Section 02010.

1.2 REFERENCES & QUALIFICATIONS

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaws and the Ontario Ministry of Labour - all as currently amended.
2. References: (All as currently amended)
 1. ASTM D698-91.
 2. CAN3-A23.1-M90.
 3. OPSS 1010-93 "Materials Specifications for Aggregates".
The provisions of OPSS 1010 and 314 apply except for the following:
 1. Granular "A" for road base, driveway base and sidewalk base shall be 100% crushed limestone obtained from a rock quarry source.
 2. Granular "B Type II" for road base shall be 100% crushed limestone obtained from quarried rock sources, and shall be clean hard, durable uncoated particles.
 3. Granular "A" and Granular "B" shall not be placed until the base has been inspected and approved by the Consultant.

1.3 SUBMITTALS

1. Provide submittals in accordance with Section 01300 – Submittals.

1.4 SPECIAL PROTECTION

Provide adequate protection of materials and work of this Section from damage by on site storage, weather, construction activities and other causes.

1. Protect the work of other sections from damage resulting from work of this section and protect the work of this section from damage resulting from work of other sections. Make good such damage to the satisfaction of the Owner and Consultant.
2. Contractor to exercise protective treatment and other precautions required through the construction period, to ensure that items listed will be without damage or deterioration other than normal weathering and wear.
3. If items are damaged / soiled as noted above, items are to be replaced / repaired at contractor's expense, not extra cost to the contract.
4. Consult with section of work soiled before cleaning to ensure methods used will not damage their work.
5. All patching and repair due to damage by other trades, shall be performed under this section and paid for by the trade responsible for the damage.
6. Protect site and adjacent lands from erosion and siltation including regular monitoring to ensure continued effectiveness.

1.5 SEQUENCING & SCHEDULING

1. Ensure all work is installed and completed that will be concealed by this work.
2. The Contractor shall cooperate in the coordination and scheduling of the product to avoid delays in job progress.
3. Coordinate the Work of this Section with the work of all other Sections in accordance with the General Instructions.
 1. Coordination and cooperation is particularly important with the following Sections: Landscaping, Site Servicing, Concrete Walks and Curbs, Asphalt Paving, Cast- In-Place Concrete, and Mechanical Excavation.
 2. Particular care shall be taken in coordinating the work of this Section with the Trade Contractors performing related work.

1.6 PROJECT SITE CONDITIONS (ENVIRONMENTAL CONDITIONS)

1. Protection
 1. Underground Services: Notify Public Utilities in advance of planned excavations adjacent to their services. Take care not to damage or displace encountered services. When such services are encountered notify Consultant immediately and protect, brace and support them. Advise Consultant on which services require adjustment, relocation or abandonment. Where work on these services become necessary use following procedure:
 1. Essential Services: Make necessary repairs only to maintain essential

services satisfactory to Consultant and authorities having jurisdiction.

2. Known Services: Repair promptly at no expense to Owner.
 3. Unknown Services: Repair promptly on Consultant's instruction. Submit complete breakdown of cost of such work. Amount approved by Owner will be added to Contract Sum.
-
2. Shoring and trench timbering, in addition to requirements of local authorities shall be carried out in accordance with requirements of The Latest Occupational Health and Safety Act, as currently amended and Regulations for Construction Projects, and all other applicable regulations of Ontario Ministry of Labour. In addition, follow the recommendations of the Construction Safety Association "Shoring and Timbering in Trenches", as currently amended, wherever applicable.
 3. Shoring and Bracing
 1. Provide necessary shoring and bracing for excavations to existing premises including fences. Submit method of shoring and bracing for review before installing. Maintain shoring and bracing during work. Remove when no longer required and when notified.
 2. Shoring and bracing shall properly retain the banks of excavations and prevent caving-in or displacement or damage to surrounding or adjacent buildings or other property.
 3. Retain shoring and bracing until all other work affected thereby is carried out.
 4. Erect shoring and bracing free of footings, foundations, walls or other such work so it may be removed entirely or in sections when it is no longer required and when directed, without causing damage or injury to the Work or adjacent property.
 5. Submit drawings showing the methods of shoring and bracing to be used. Drawings shall be engineered and stamped by a Certified Engineer from the Province of Ontario. Submit calculations if requested by the consultant.
-
2. Sub-Surface Conditions
 1. A copy of the Sub-Surface Investigation Report is included in the Soil Report - Section 02010 in this specification for your review.
 2. The information given in this report was obtained for the use of the Owner in the execution of the design. It is presented in good faith to assist the Contractor. No guarantee is made or implied as to its detailed accuracy for every site location. It is incumbent upon the Contractor to make any additional tests to obtain any additional information deemed necessary for the proper execution of the work, at no additional cost to the Owner.

3. Environmental Conditions

1. Comply with the requirements of the following Federal and Provincial Legislation related to the transportation use and disposal of all existing contaminated fill materials being excavated from site.
 1. Federal Transportation of Dangerous Goods Act.
 2. Ontario Regulation number 309: Liquid industrial and hazardous waste regulation.
 3. Ontario Regulation number 406: On-Site and Excess Soil Management
 4. All such waste shall be carried by an approved Ministry of the Environment Haulage carrier and disposed of at a Ministry of the Environment approved receiving facility.
2. Examine the site for the purpose of determining the conditions prevailing there, which may affect the work of this Section, including available access to the site, site contours, etc.
3. Determine the nature and location of all existing services below and above ground, which may affect the work of this Section.

1.7 **APPROVAL**

1. All materials shall be subject to test and inspection by a Testing and Inspection Company appointed by the General Contractor and approved by the Consultant.
2. The cost of testing will be paid for by the Cash Allowance Section 01020 in accordance with the General Conditions.
3. Cost of testing will be paid for by the Owner in accordance with the General Conditions.
4. Provide access to pits in quarries for the personnel of the Inspection Company.
5. Provide representative samples of materials as may be required by the Inspection Company at no cost to the Owner.

PART 2 - PRODUCTS

2.1 **MATERIALS**

1. Class "A" Granular: Imported granular material in accordance with O.P.S. Specification Form 1010 for Granular 'A' Specification Form 1010. With the exception that the material shall be 100% crushed limestone.
2. Class "B" Granular: Imported granular material in accordance with O.P.S. Specification Form 1010 for Granular 'B' Type II
3. Granular material shall be free draining and not susceptible to frost action as determined by current O.P.S.S. Methods.

4. Backfill and Fill at Landscaped, Seed and Sodded Areas: Clean excavated materials free from waste materials, debris, rubbish, frozen portions, muskeg, organic or cohesive matter and rocks larger than 100 mm (4") in diameter. If sufficient quantity of material is not available from excavation, use imported fill having same, or better characteristics.
5. Clear crushed aggregate: Clear, clean, screened stone, in size between 10mm and 25mm.
6. Topsoil: Coordinate with 02920 Topsoil Placement & Grading.
7. Submit representative samples of the proposed materials to the inspection company for testing and approval for use on this project two weeks prior to using.
8. Supply only those materials approved for use on this project by the inspection company.
9. Slag content in any imported granular material is not acceptable.

PART 3 - EXECUTION

3.1 EXAMINATION

1. Examine the site for the purpose of determining the conditions prevailing there which may affect the work of this Section, including available access to the site, and existing ground water conditions.
2. Determine the nature and location of all existing services above and below ground which may require protection during the construction operation, or otherwise affect the work of this Section.

3.2 PREPARATION

1. Clearing
 1. Clear and remove obstructions to excavating. Remove trees and stumps not required to be retained.
 2. Clear site of all rubbish, rocks, boulders, tree stumps and other useless materials and debris, remove from site and dispose of unless instructed otherwise.
 3. Cut all dead trees and remove stumps and roots to a minimum depth of 600 mm below proposed finished grade.
 4. Burying of useless materials on the site is permitted only when approved in writing by the Consultant.
 5. Bury only in areas designated by the Consultant and do so in strict accordance with all applicable laws and regulations.
 6. Be responsible for obtaining the necessary permits and assume all costs.
 7. Bury to such depth and in such manner so as not to affect landscape work.
 8. Backfill with approved fill and compact.

2. Topsoil and Stripping

1. Strip area of Site to be excavated or graded free of topsoil and stockpile good re-usable topsoil as approved by the Consultant. Remove all unapproved topsoil and all other excavated materials from the site. Dispose of contaminated materials in conformance of Federal and Provincial Legislation requirements.
2. All areas designed for landscape, sod and seeding or paving or the construction of structures, shall be stripped of all topsoil and organic matter to its full depth taking care not to contaminate with any sub-soil. Refer to Site Plan drawings.
3. All stripped topsoil shall be stockpiled in areas so designated by the Landscape Consultant.
4. Topsoil will be re-used for landscape work, unless specified otherwise.
5. Commence topsoil stripping only after designated areas have been cleared of scrub, weeds, brush stumps, rocks and other deleterious materials. Such materials shall be removed from the site and disposed of by the Contractor.

3. Lines and Levels

1. Establish accurate lines and levels as required and supply batter boards, line stakes and templates and establish permanent reference lines and bench marks required.

3.3 PERFORMANCE

1. General

1. After stripping of topsoil, do all necessary rough grading, excavating, and filling, where required, to establish the sub-grade under all areas to the extent, elevations and depth required for completion of work.
2. Level of sub-grade shall be to the depths specified, after compaction of sub-grade and of materials placed thereon to allow for finished grades shown on drawings.
3. Remove all unsuitable material, soft and/or unstable areas in sub-grade to approved depth and backfill with clean, approved fill material.
4. Provide for uniform slopes between points for which finished grades are shown on drawings. Meet and blend with existing grades in a smooth manner.
5. Establish smoothly rounded grades at top and toe of slopes and banks.
6. Do not grade when soil is wet or frozen.
7. Compact sub-grade behind curbs, walls, and under paving and other hard surfaces to the specified density.

8. Preparations of sub-grade:
 1. Scarify sub-grade on which topsoil is to be placed, to the minimum depths specified.
 2. Scarify sub-grades under areas which are to be raised by placing fill to minimum depth of 3" (75 mm) to provide a good bond and prevent slipping of fill.
 9. Fill material shall be clean, free of topsoil and organic matter and debris, and shall be approved by the Consultant before placing. On site excavating material may be used for filling when approved by the Consultant.
 10. Where required, supply and spread approved fill materials to raise existing grades to the specified sub-grade level, as shown on the drawings for new finish elevations.
 11. Place fill in loose layers, not exceeding 200 mm in depth and compact each layer to a minimum dry density of ninety-five percent (95%) of the maximum Standard Proctor Density unless noted otherwise, before placing subsequent layers. Placed fill within 1.0m of final grade shall be compacted to a minimum dry density of ninety eight percent (98%) of the Maximum Standard Proctor Density where located under hard surfaces, such as paving, and sidewalks.
 12. The surface shall be shaped at all times to ensure adequate surface run-off and prevent ponding and scouring.
 13. Keep excavation free of water by bailing, pumping or a system of drainage as required and provide pumps, suction and discharge lines or well points of sufficient capacity and maintain until such time as the permanent drainage system is installed or until Consultant agrees to its removal. Take all necessary measures to prevent flow of water into excavation.
 14. Water discharged from de-watering systems shall be equal to or better in quality than the receiving stream or sewer storm water and shall be free of pollutants. Provide settling ponds and/or other treatment facilities as required to treat discharges at no cost to Owner.
 15. Supply and install additional erosion controls and temporary sedimentation ponds, plastic tubing and temporary catch basins, as required to prevent erosion and contamination of sediment onto other properties or into waterways.
 16. Maintain existing and any additional erosion controls until sod has been installed or seed areas have been growing for six (6) months then remove all temporary erosion controls.
2. Below and perimeter of Building Excavation
1. Refer to Specification Section 02220 Excavating Trenching and Backfilling for all areas below and perimeter of building area.

3. Roadways, Parking Lots, Concrete Walks and Curbs Excavation

1. Excavate and rough grade at roadways, parking lots and hard surfaced areas to suit layouts shown on the drawings.
2. At roadways and paved parking areas (heavy duty asphalt areas), excavate to remove all topsoil, organic matter or deleterious material to a depth not less than the full pavement design thickness noted on the drawings below the final asphalt grade but not less than sufficient depth to remove all topsoil, asphalt, soft and compressible materials to expose competent subgrade soil level.
3. At medium duty asphalt areas excavate to remove all topsoil, organic matter or deleterious material to a depth not less than the full pavement design thickness noted on the drawings below finished grade but not less than sufficient depth to remove all topsoil, asphalt, soft and compressible materials to expose competent subgrade soil level.
4. At concrete walk areas excavate to a minimum depth of 475 mm below finished grade **but not less** than sufficient depth to remove all top soil, soft and compressible materials to expose competent subgrade soil level.
5. Slope and shape subgrade towards catch basins and subgrade subdrains with 2% fall at roads and a minimum 1% at parking areas. (See drawing for further details.) Proof-roll existing sub-grade after excavation and shaping with a heavy vibratory roller.
6. Sub-excavate any soft or compressible materials and fill with modified Granular "B" compacted to 100% of SPMDD.
7. Provide rock removal and excavation and disposal where encountered at site service areas to obtain required depths.

4. General Backfilling

1. Prior to placing backfill, proof roll the exposed subgrade thoroughly with a smooth heavy roller to compact any loose zones. Sub-excavate any soft or compressible materials.
2. Proceed promptly with backfilling as work progresses after obtaining Consultant's review.
3. Remove shoring material during backfilling.
4. Inspect moisture content of fill prior to placing. Limit addition of water only to extent required to provide optimum moisture content for compaction. Puddling or flooding with water to compact fill is not permitted.
5. Place all backfill and engineered fill in 200 mm (8") thick maximum layers. Compact each layer before placing next using approved mechanical equipment until compaction and level is reached.
6. Areas adjoining vulnerable building components which cannot be thoroughly compacted by drawn equipment, shall receive equivalent compaction with mechanical tampers.

7. Fill shall be free of frost, snow and ice and in no instance shall fill be placed on frozen snow, or ice-covered ground.
8. Coordinate with Specification Section 02200 Excavation, Trenching & Backfilling
5. Roadways, Parking Lots and Hard Surfaced Areas, Fill
 1. Refer to specification sections; 02520 Concrete Walks, Curbs & Gutters and 02510 Asphalt Paving for compacted fill work.
6. Rough Grading
 1. Rough grade all areas around the building in accordance with the site plan and required and existing grades, and as directed by the Consultant. Coordinate this Work with Work of other Sections.
 2. Areas to receive sod or seeding shall be rough graded to an elevation 150mm (6") below finished grade.
 3. Slope ground so that water will drain at all times away from the building.
 4. Rough graded areas shall be cleanly raked free of coarse material and left ready for final grading.
7. Installation of Topsoil
 1. Coordinate with specification section 02920 Topsoil Placement & Grading.

3.4 PROTECTION OF EXCAVATIONS

1. Protect adjacent construction and underground services from damage resulting from the excavation operations and from frost penetration.

3.5 PROTECTIVE MEASURES

1. Furnish all necessary barriers and other protection around open excavations. For other barriers and hoardings, consult General Works Section.
2. Maintain barricades in good condition at all times until they are no longer required.

3.6 FIELD QUALITY CONTROL

1. All materials and workmanship shall be subject to test and inspection by a Certified Testing and Inspection Company appointed by the General Contractor. Testing and Inspection Company shall be submitted to the Owner and Consultant for approval.
2. A representative of the Testing and Inspection Company will perform inspections at the rates noted in the testing frequency
3. Sieve analysis, SPMDD tests for fill materials and field density tests of the compacted fill materials will be made by this inspector to ensure that the specified standard of work is achieved.

4. All excavation, placing and compaction procedures will be subject to the approval of the inspector.
5. Materials which fail to achieve the specified standard of compaction shall be re- compacted or replaced as directed by the testing representative, at no additional cost to Owner.
6. Provide access to the work for the personnel of the Testing and Inspection Company.
7. The compaction tests are performed on behalf of the Owner to satisfy the Consultant that the requirements of the Contract Documents have been met. They are not intended as a substitute for the contractor's quality control program.

3.7 ROAD DUST CONTROL

1. The provisions of OPSS 506 shall apply except that:

Dust control shall be the sole responsibility of the Contractor. The Contractor shall be solely responsible for any damage or claim as the result of dust, and the Contractor shall hold harmless the Owner and the Consultant from any such claims. The Consultant or the Owner may direct the Contractor to increase the dust control measures. If the Contractor fails to control dust to the satisfaction of the Consultant or the Owner, then the Consultant or the Owner may take steps required to control the dust, and the cost of such control shall be deducted from payment due to the Contractor under this contract.

Dust control shall be achieved with water and calcium chloride in the form of loose dry flakes at a minimum.

3.8 CLEAN-UP

1. At the completion of the work of this Section, remove any excess materials, debris and equipment from the site.
2. Remove from work site all contaminated excavated material and dispose at an approved dump site in conformance with all Federal and Provincial Legislation for disposal of contaminated materials.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. Excavation, trenching, and backfilling for the installation of underground building systems and services, interior and exterior conditions.

1.2 REFERENCES & QUALIFICATIONS

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaw and the Ontario Ministry of Labour - all as currently amended. In case of conflict between Codes, the Ontario Building Code will govern.
2. References: (All as currently amended)
 1. American Society for Testing and Materials International (ASTM):
 1. ASTM A653-10/A653M-10, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 2. ASTM C117-04, Standard Test Method for Materials Finer than 75-microm (No.200) Sieve in Mineral Aggregates by Washing.
 3. ASTM C136-06, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
 4. ASTM D422-63 (2007), Standard Test Method for Particle-Size Analysis of Soils.
 5. ASTM D698-07e1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft³ (600 kN-m/m³)).
 6. ASTM D751-06, Standard Test Methods for Coated Fabrics.
 7. ASTM D1557-09, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³)).
 8. ASTM D4318-10, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
 2. Canadian General Standards Board (CGSB):
 1. CAN/CGSB-8.1-88, Sieves, Testing, Woven Wire, Inch Series.
 2. CAN/CGSB-8.2-M88, Sieves, Testing, Woven Wire, Metric.
 3. Canadian Standards Association (CSA International):
 1. CAN/CSA-A3000-08, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).

1. CSA-A3001-08, Cementitious Materials for Use in Concrete.
2. CSA-A23.1-09/A23.2-09, Concrete materials and methods of concrete construction/Test methods and standard practices for concrete.
4. Ontario Provincial Standard Specifications (OPSS):
 1. OPSS 401 - Construction Specification for Trenching, Backfilling, and Compacting.
 2. OPSS 402 - Construction Specification for Excavating, Backfilling, and Compacting for Maintenance Holes, Catch basins, Ditch Inlets, and Valve Chambers.
 3. OPSS 1004 - Material Specification for Aggregates - Miscellaneous.
 4. OPSS 1010 - Material Specification for Aggregates - Base, Subbase, Select Subgrade, and Backfill Material.
 5. OPSS 1359 - Material Specification for Unshrinkable Backfill.
5. Engage services of qualified professional Engineer who is registered or licensed in Province of Ontario, Canada in which Work is to be carried out to design and inspect shoring, bracing and underpinning required for Work. Design and supporting data submitted to bear stamp and signature of qualified professional engineer registered or licensed in Province of Ontario, Canada.
6. Do not use soil material until written report of soil test results are reviewed by the Geotechnical Engineer.

1.3 SEQUENCING & SCHEDULING

1. Ensure all work is installed and completed that will be concealed by this work.
2. The Contractor shall cooperate in the coordination and scheduling of the product to avoid delays in job progress.
3. Submit design and supporting data at least 2 weeks prior to beginning Work where required.

1.4 PROJECT SITE CONDITIONS

1. Keep design and supporting data on site.
2. Examine relevant geotechnical reports included with the Contract.
3. Buried services:
 1. Before commencing work establish location of buried services on and adjacent to site.
 2. Coordinate with appropriate authority for relocation of buried services that interfere with execution of work.
 3. Remove obsolete buried services within 2m of foundations in accordance with Section 02225- Selective Site Demolition.
 4. Size, depth and location of existing utilities and structures as indicated are for guidance only. Completeness and accuracy are not guaranteed.

5. Prior to beginning excavation Work, notify applicable authorities having jurisdiction to establish location and state of use of buried utilities and structures. Authorities having jurisdiction or independent locating firm to clearly mark such locations to prevent disturbance during Work.
 6. Confirm locations of buried utilities by careful test excavations or soil hydrovac methods.
 7. Maintain and protect from damage, water, sewer, gas, electric, telephone and other utilities and structures encountered.
 8. Where utility lines or structures exist in area of excavation, obtain direction of Owner before removing or re-routing.
 9. Record location of maintained, re-routed and abandoned underground lines.
 10. Confirm locations of recent excavations adjacent to area of excavation.
 11. The Contractor shall be solely responsible for the protection and support of all utilities including those not indicated on the drawings.
 12. The existing utility locations shown on the drawings have been provided by the area utility companies therefore G. Douglas Vallee Limited or the Owner cannot accept responsibility for damage to any existing utility which may or may not be indicated on the drawings.
4. Existing buildings and surface features (where applicable):
1. Conduct, with the Owner, condition survey of existing buildings, trees and other plants, lawns, fencing, service poles, wires, rail tracks, pavement, survey bench marks and monuments which may be affected by Work.
 2. Protect existing buildings and surface features from damage while Work is in progress. In event of damage, immediately make repair to the satisfaction of the Owner.

1.5 TESTING

1. Do not use soil material until written report of soil test results are reviewed by the Geotechnical Engineer.

PART 2 – PRODUCTS

2.1 MATERIALS

1. Granular material: to OPSS 1010 with exception that all material shall be 100% crushed limestone.
2. Sand: in accordance with OPSS 1004.
3. Drainage material: 19mm crushed stone or 19 to 63mm clean gravel to OPSS 1004.
4. Unshrinkable fill: proportioned and mixed to meet OPSS 1359 - Unshrinkable Backfill and the following requirements:
 1. Maximum compressive strength of 0.7 MPa at 28 days.
 2. Cement: Type GU.

3. Slump: 160 to 200mm.
5. Backfill: Compacted Granular 'B' fill at all hard surface areas unless clean (no debris) native excavated soil is otherwise approved by geotechnical engineer / testing and testing inspection agency and clean (no debris) native excavated soil at all soft / landscape surface areas typical.

PART 3 – EXECUTION

3.1 SITE PREPARATION

1. Remove obstructions, ice and snow, from surfaces to be excavated within limits indicated.
2. Cut pavement, sidewalk, or concrete neatly along limits of proposed excavation in order that surface may break evenly and cleanly in accordance with Section 02225 Selective Demolition.

3.2 PREPARATION / PROTECTION

1. Protect existing features.
2. Protect existing buildings and surface features from damage while work is in progress. In event of damage, immediately make repair to the satisfaction and no cost to the Owner.
3. Keep excavations clean, free of standing water, and loose soil.
4. Where soil is subject to significant volume change due to change in moisture content, cover and protect.
5. Protect natural and man-made features required to remain undisturbed. Unless otherwise indicated or located in an area to be occupied by new construction, protect existing trees from damage.
6. Protect buried services that are required to remain undisturbed.

3.3 STOCKPILING

1. Stockpile fill materials and protect from contamination.
2. Stockpile granular materials in manner to prevent segregation.

3.4 COFFERDAMS. SHORING. BRACING AND UNDERPINNING

1. The Contractor is not to allow the sides of the excavation to become unsafe and is to provide, place and maintain such sheet piling, sheathing, shoring and bracing as are necessary for safety. Maintain sides and slopes of excavations in safe condition by appropriate methods in accordance with the Health and Safety Act for the Province of Ontario.
 1. Where conditions are unstable, Contractor shall stabilize excavations as soon as possible.
 2. Fill in compact voids behind sheet piling, sheathing, shoring and bracing with an approved granular material or native material when directed by the Geotechnical Engineer.

2. During backfill operation:
 1. Unless otherwise indicated or directed by the Geotechnical Engineer, remove sheet piling, sheathing, shoring from excavations.
 2. Do not remove bracing until backfilling has reached respective levels of such bracing.
3. When sheeting is required to remain in place, cut off tops at elevations as directed by the Geotechnical Engineer.
4. Upon completion of substructure construction:
 1. Remove cofferdams, shoring and bracing.
 2. Remove excess materials.

3.5 DEWATERING AND HEAVE PREVENTION

1. Groundwater conditions are provided in the relevant background documents that form part of this Contract. The Owner accepts no responsibility for the accuracy or completeness of the information and recommendations in the report for the Contractor's interpretation thereof.
2. Keep excavations free of water while Work is in progress.
3. Provide details of proposed dewatering or heave prevention methods, including dikes, well points, and sheet pile cut-offs for review by the Geotechnical Engineer.
4. Avoid excavation below groundwater table if quick condition or heave is likely to occur.
 1. Prevent piping or bottom heave of excavations by groundwater lowering, sheet pile cut-offs, or other means.
5. Protect open excavations against flooding and damage due to surface run-off.

3.6 EXCAVATION

1. General:
 1. The Contractor is responsible for examining the Geotechnical Report that forms part of this Contract and abide by all recommendations within the report where available.
 2. Excavate to lines, grades, elevations and dimensions as required.
 3. Remove concrete, masonry, paving, walks, demolished foundations, rubble and other obstructions encountered during excavation in accordance with Section 02225 - Selective Demolition.
 4. Keep excavated and stockpiled materials safe distance away from edge of trench.
 5. Earth bottoms of excavations to be undisturbed soil, level, free from loose, soft or organic matter.
 6. Remove unsuitable material from trench bottom including those that extend below required elevations to extent and depth.

7. The Contractor is not to allow the sides of the excavation to become unsafe and is to provide, place and maintain such sheeting, struts, walling, etc. as are necessary for safety.
 8. The control of siltation and contamination is the Contractor's responsibility throughout the undertaking of this Contract. The Contractor is not to permit sediment or contamination to leave the work zone areas. The Contractor is responsible for clean-up on a daily basis and is to be included in the contract price.
2. Site:
1. For trench excavation, do not excavate more than 30m of trench in advance of installation operations and do not leave open more than 15m at end of day's operation.
 2. Restrict vehicle operations directly adjacent to open trenches.
 3. Do not obstruct flow of surface drainage or natural watercourses.
 4. Obtain Geotechnical Engineer review approval of completed excavation.
 5. Correct unauthorized over-excavation as directed by the Geotechnical Engineer. Fill and compact the excavation to the correct grade with an approved material without compensation to specified densities.
3. Building(s):
1. Excavation must not interfere with bearing capacity of adjacent foundations.

3.7 FILL TYPES AND COMPACTION

1. All engineering fill shall be generated, placed and compacted in accordance with the relevant geotechnical investigation where available, and as per direction of the Geotechnical Engineer.
2. The approved fill should be placed in compacted lifts not exceeding 150mm in thickness and be uniformly compacted to at least 98% SPMDD.
3. Place unshrinkable fill in areas as indicated.
4. The fill should not be constructed during winter months when persistent or intermittent freezing temperatures occur. If the fill areas are left for a period of time, a suitable soil cover must be provided to prevent frost action and disturbance.

3.8 BEDDING AND SURROUND OF UNDERGROUND SERVICES

1. Place and compact granular material for bedding and surround of underground services underneath, beside and over the service to 98% Standard Proctor Maximum Dry Density in accordance with respective specification section for underground service.
2. Place bedding and surround material in unfrozen condition.

3.9 BACKFILLING

1. Use vibratory compaction equipment.
2. Do not proceed with backfilling operations until completion of following:

1. Inspection, testing, approval, and recording location of underground items and utilities.
2. Removal of concrete formwork.
3. Removal of shoring and bracing; backfilling of voids with satisfactory soil material.
3. Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.
4. Do not use backfill material which is frozen or contains ice, snow or debris.
5. Place backfill material in uniform layers not exceeding 150mm compacted thickness up to grades indicated. Compact each layer before placing succeeding layer.
6. Backfilling around installations:
 1. Place bedding and surround material as specified in relevant sections.
 2. Do not backfill around or above cast-in-place concrete within 24 hours after placing of concrete or before approval from authorities having jurisdiction.
 3. Place layers simultaneously on both sides of installed Work to equalize loading. Difference not to exceed 1m.
 4. Where temporary unbalanced earth pressures are liable to develop on walls or other structures:
 1. Permit concrete to cure for minimum 14 days or until it has sufficient strength to withstand earth and compaction pressure, and approval has been obtained from Geotechnical Engineer.
7. Place unshrinkable fill in areas as indicated.
8. Consolidate and level unshrinkable fill with internal vibrators.
9. Install drainage system in backfill as indicated.
10. Any deficiency of backfill material is to be supplied by the Contractor and must meet the approval of the Geotechnical Engineer.
11. Correct any settlement occurring after backfilling without compensation.

3.10 RESTORATION

1. Upon completion of Work, remove waste materials and debris, trim slopes, and correct defects.
2. Replace topsoil where required.
3. Clean and reinstate areas affected by Work.
4. Use temporary plating to support traffic loads over unshrinkable fill for initial 24 hours.
5. Protect newly graded areas from traffic and erosion and maintain free of trash or debris.

3.11 INSPECTION TESTING

1. Testing of materials and compaction is to be carried out by the Geotechnical Engineer.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. Coordinate all locations shown on drawings, noted in specifications and for all items located herein.

1.2 REFERENCES & QUALIFICATIONS

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaw and the Ontario Ministry of Labour - all as currently amended except where indicated otherwise on drawings or specified herein. In case of conflict between Codes, the Ontario Building Code will govern.
2. **Qualifications:**
 1. Employ for this work demolition company having 5 years Canadian experience in this type of work satisfactory to Consultant. If requested, submit proof of experience.
3. **References: (All as currently amended)**
 1. CSA S350 M80 (R2003) Code of Practice for Safety in Demolition of Structures
 2. Conform to the latest Occupational Health and Safety Act, as currently amended.
 3. Designated Substance - Asbestos on Construction Projects and in Building and Repair Operations;
 4. Conform to Fire Code, Regulation under Fire Marshals Act especially Part 8.
 5. Remove hazardous materials in accordance with applicable laws and regulations.
 6. Carry out demolition in accordance with requirements of CSA S350-M. Demolish and remove materials from Site.

1.3 SPECIAL PROTECTION

1. Provide adequate protection of materials and work of this Section from damage by on site storage, weather, construction activities and other causes.
2. Protect the work of other sections from damage resulting from work of this section and protect the work of this section from damage resulting from work of other sections. Make good such damage to the satisfaction of the Consultant.
3. Contractor to exercise protective treatment and other precautions required through the construction period, to ensure that items listed will be without damage or deterioration other than normal weathering and wear.
4. If items are damaged / soiled as noted above, items are to be replaced / repaired at Contractor's expense, not extra cost to the contract.

5. Consult with section of work soiled before cleaning to ensure methods used will not damage their work.
6. All patching and repair due to damage by other trades, shall be performed under this section and paid for by the trade responsible for the damage.

1.4 SEQUENCING & SCHEDULING

1. The Contractor shall cooperate in the coordination and scheduling of the project to avoid delays in job progress.
2. The existing Quonset Hut/ Maintenance Building is to be removed after the construction of the new Maintenance Building is complete.

PART 2 - PRODUCTS

2.1 MATERIALS

1. All existing components being demolished shall become property of this Section. Remove from Site.

PART 3 - EXECUTION

3.1 PREPARATION

1. Erect and maintain dustproof partitions as required to prevent spread of dust to other parts of building. On completion, remove partitions and make good surfaces to match adjacent surfaces of building. Ensure that all dust and debris is removed before finishing work commences.

3.2 PERFORMANCE

1. Contractor to coordinate with all drawings and specifications for demolition scope.
2. Materials and debris shall not be stacked in building but removed entirely from all circulation spaces at the end of each day.
3. At end of each day's work leave work in safe and clean condition.

3.3 DISPOSAL OF MATERIALS

1. Selling or burning of materials on Site is not permitted.
2. Provide bin for garbage in a location acceptable to the Owner.
3. Conform to requirements of municipality's Public Works Department regarding disposal of waste materials.
4. Materials prohibited from municipality waste management facilities shall be removed from Site and disposed of at recycling companies specializing in recyclable materials.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. Supply and install granular A, B and asphalt as shown on drawings or as indicated herein.

1.2 REFERENCES & QUALIFICATIONS

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaw and the Ontario Ministry of Labour - all as currently amended.
2. References: (All as currently amended)
 1. O.P.S. Specification Form 310A "Specification for Hot Mix Patching".
 2. O.P.S. Specification Form 310, "Construction Specification for Hot Mixed, Hot Laid Asphaltic Concrete".
 3. O.P.S. Specification Form 1150, "Material specification for Hot Mixed, Hot Laid Asphaltic Concrete".
 4. ASTM D698-91 "Test Methods.
 5. All other OPSD details as indicated on drawings.

1.3 SUBMITTALS

1. Provide submittals in accordance with Section 01300 – Submittals.
2. Contractor shall submit HMA Design Report for each mix design minimum 1 week before any placement is to occur.
3. Contractor shall submit asphalt testing results as soon as available. Testing reports shall confirm asphaltic cement content for price adjustment. Payment for asphalt will not be authorized until asphaltic cement content is confirmed for each mix design placed.

1.4 ALLOWANCES

1. N/A.

1.5 SPECIAL PROTECTION

1. Provide adequate protection of materials and work of this Section from damage by on site storage, weather, construction activities and other causes.
2. Protect the work of other sections from damage resulting from work of this section and protect the work of this section from damage resulting from work of other sections. Make good such damage to the satisfaction of the Consultant.

3. Contractor to exercise protective treatment and other precautions required through the construction period, to ensure that items listed will be without damage or deterioration other than normal weathering and wear.
4. If items are damaged / soiled as noted above, items are to be replaced / repaired at contractor's expense, not extra cost to the contract.
5. Consult with section of work soiled before cleaning to ensure methods used will not damage their work.
6. All patching and repair due to damage by other trades, shall be performed under this section and paid for by the trade responsible for the damage.
7. Barricade paved surfaces from traffic until surfaces are ready for normal traffic.
8. Complete Flush and CCTV inspection of all sewers in conformance with Inspection of Underground Pipe Lines Section and submit report and video to Consultant to obtain approval prior to any asphalt work proceeding.

1.6 WARRANTY

1. The work under this section shall be warranted in accordance with the Conditions of G.C. 12.3 of CCDC-2-2020 and SC3.44 of City of Brantford's Supplementary Conditions, but for a period of two (2) years after the date of Substantial Completion.

1.7 SEQUENCING & SCHEDULING

1. Ensure all work is installed and completed that will be concealed by this work.
2. The Contractor shall cooperate in the coordination and scheduling of the project to avoid delays in job progress.

1.8 PROJECT SITE CONDITIONS (ENVIRONMENTAL CONDITIONS)

1. Asphalt shall be laid only when base is dry and weather conditions are suitable.
2. H.L. 4 Binder course Asphaltic Concrete Base shall be laid at minimum ambient temperature of (46 degrees F.), (8 degrees C.) and rising.
3. H.L.3 (fine aggregate) Surface Course Asphaltic Concrete shall be laid at minimum ambient temperature of (46 degrees F.), (8 degrees C.) and rising.

1.9 TESTING & INSPECTION

1. All materials and workmanship shall be subject to test and inspection by a testing and inspection company appointed by the Contractor and approved by the Consultant.
2. Cost of testing and inspection will be paid from the Testing and Inspection Allowance in accordance with Division 1, except as noted hereafter.
3. Provide representative samples of the materials as requested by the testing and inspection company at no additional cost to the owner.
4. The cost of any additional testing and/or the cost of replacement of any part of the

asphalt work resulting from failure of the asphalt to meet the test requirements, shall be borne by the contractor.

5. Where field tests have been cut as block samples from the in-place asphalt concrete, replace and make good to the satisfaction of the consultant.
6. Notify the testing company of the paving schedule, sufficiently in advance so that tests may be made.
7. Testing shall occur at a frequency of not less than 10 random and representative test locations over the asphalt area. Including 3 in the cart path, 3 in the front drive and the remaining 4 in the west lot.
8. Compact as outlined in O.P.S. Specification Form 310 to at least 97% Marshall Density obtained with Marshall specimens prepared in accordance with ASTM D1559-82 from samples of mix being used. Samples obtained from the spreader hopper or truck box shall not be used for QA/QC testing. Sampling locations shall provide a representative sample of the work.

PART 2 - PRODUCTS

2.1 MATERIALS

1. Granular material: To OPSS 1010.
 1. Class "A" Granular: Imported granular material in accordance with O.P.S. Specification Form 1010 for Granular 'A' Specification Form 1010. With the exception that the material shall be 100% crushed limestone.
 2. Class "B" Granular: Imported granular material in accordance with O.P.S. Specification Form 1010 for Granular 'B' Type II.
 3. Granular material shall be free draining and not susceptible to frost action as determined by current O.P.S.S. Methods.
 4. Slag content in any imported granular material is not acceptable.
2. H.L.4 Binder: Asphaltic concrete material shall conform to O.P.S. Specification Form 1150-93.
3. H.L.3 or H.L.3A Asphaltic Concrete: Asphalt concrete material shall conform to O.P.S. Specification Form 1150-93.
4. Asphaltic Primer: To CAN/CGSB-16.1-M77 Grade Mc-70.

2.2 SOURCE QUALITY CONTROL

1. Cost of testing will be paid from the Testing and Inspection Allowance in accordance with Division 1.
2. Provide access to pits in quarries for the personnel of the Inspection Company.

PART 3 - EXECUTION

3.1 GRANULAR SUB-BASE AND BASE UNDER ROADWAYS, DRIVEWAYS, PARKING AREAS AND WALKWAYS

1. Carefully lay out areas to be paved to required lines and levels. Proof roll subgrade and remove all soft spots.

Note: Granular base course to extend a minimum 12" (300 mm) beyond the edge of the paving areas.

Note: Provide additional Granular B where required to raise grades to suit new finish grades.

2. Install specified (minimum 250mm) thickness of Granular 'B' sub-base at **medium and light duty** areas under Granular 'A' by this section. Compact to 100% SPMDD.
3. Install specified (minimum 150mm) thickness of compacted Granular "A" at **heavy duty, medium duty and light duty** asphalt areas above Granular "B" base, by this Section. Compact to 100% SPMDD.

3.2 INSTALLATION OF ASPHALT PAVING

The provisions of OPSS 310, 1003, 1101, 1103 and 1150 shall apply, except for the following:

1. Asphalt mix type and lift thicknesses shall be provided as noted in the **geotechnical report** and the drawings.
2. No asphalt lifts greater than 60mm shall be placed and compacted at one time unless directed otherwise by geotechnical consultant and approved by Consultant.
3. All vertical edges of existing and milled asphalt surfaces, catch basin frames, curbs, and similar items shall be tack coated prior to placement of asphalt.
4. Tack Coat shall be applied evenly by means of a pressure distributor. Apply tack coat ahead of the paver to accommodate no more than two (2) hours of production of the hot mix paving operation. Do not allow traffic to travel on the tack coat. Do not place hot mix asphalt upon tack coated areas until the tack coat has dried to a condition of tackiness.
5. Compact each course with roller as soon as it can support roller weight without undue cracking or displacement. Roller shall be power driven, minimum mass of 4.5 tonnes, minimum wheel width 600 mm. Roll until roller marks are eliminated. Keep rollers speed slow enough to avoid mix displacement and do not stop roller on fresh pavement.
6. Moisten roller wheels with water to prevent mix adhesion. Compact mix with hot tampers or other approved equipment in areas inaccessible to roller. Finish surface smooth, true to grade to within 10 mm and with no irregularities greater than 10 mm in 4.5 metres.
7. Temperature of asphalt shall not be less than 245 degrees F (120 degrees C) after spreading and prior to initial rolling.
8. Place all asphalt using a self-propelled vibrating highway type spreader as approved by the Consultant and compact using rollers of sufficient size and weight as specified by O.P.S. Specification Standard.

9. Maintain specified slopes, elevations and "crowns" as shown on the site plan and in accordance with good construction practice to maintain positive drainage to storm sewers and eliminate ponding. If ponding occurs asphalt will be neatly cut out and reinstalled to eliminate ponding.
10. Refer to 3.1.1 above for "dressing" of shoulders.
11. Mix design shall be submitted to the Consultant a minimum of 10 business days prior to the start of the paving operation for review. Approval must be obtained in writing prior to installation.
12. Lap joints shall be cut (if required) to comply with the dimensions noted in the drawing details.
13. The Contractor must have a sufficient number of trucks available to supply the amount of Hot Mix Asphalt to ensure a continuous operation of the paver at a consistent and satisfactory rate and ambient mix temperature, as directed by the Consultant.

3.3 **ASPHALT CEMENT PRICE INDEXING**

1. The Engineer will adjust the payment to the Contractor for Hot Mix Tender Items based on changes to the Ministry of Transportation's performance graded Asphalt Cement Price Index unless the Contractor opts out by notifying the Engineer in writing within five (5) business days after the award of the Contract. Once the Contractor has opted out of payment adjustments based on the index, the Contractor will not be permitted to opt back in. The price index will be published monthly on the MTO Contract Bulletin and displayed on the MTO web site at (www.raqsa.mto.gov.on.ca). The price index will be used to calculate the amount of the payment adjustment per tonne of new asphalt cement accepted into the Work.
2. The price index will be based on the price, excluding taxes, FOB the depots in the Toronto area, of Asphalt Cement grade PG 58-28 or equivalent. One index will be used to establish and calculate the payment adjustment for all grades.
3. A payment adjustment per tonne of new asphalt cement will be established for each month in which paving occurs when the price index for the month differs by more than \$15.00/tonne from the price index for the month preceding the month in which the Tender was released by the Municipality. When the price index differential is less than \$15.00/tonne, there will be no payment adjustment established for that month. Payment adjustments due to changes in the price index are independent of any other payment adjustments made to the Hot Mix Tender Items.
4. The payment adjustment for the month will be calculated as follows:
5. When **Asphalt Cement prices are rising** by more than \$15.00/tonne difference, the payment adjustment to be paid to the Contractor is calculated by subtracting the price index in effect when the Tender was released from the price index in effect when paving took place, minus the \$15.00 float. The result is then multiplied by the number of tonnes of PGAC incorporated in the mix(s) as determined by the job mix formula. If the answer is negative, no adjustment will be made.

Example 1 – AC Prices Increasing

3,000 tonnes of HL3 @ 5.2 % AC

Price Index on release of tender (April 2024) is \$676.47/tonne

Price Index during August 17 – 24, 2024 actual paving dates - \$753.10/tonne

Payment adjustment to be paid to the Bidder:

$$= ((\$753.10 - \$15.00) - \$676.47) \times (3,000 \text{ tonnes} \times 5.2\%)$$

$$= 61.63 \times 156$$

$$= \$9,614.28$$

6. When **Asphalt Cement prices are falling** by more than \$15.00/tonne difference, the payment adjustment made in favour of the Owner is the result of subtracting the price index in effect when paving took place, plus \$15.00 float, from the price index when the Tender was released. The result is then multiplied by the number of tonnes of PGAC incorporated into the mix(s) as determined by the job mix formula.

Example 2 – AC Prices Decreasing

4,500 tonnes of HL-8 @ 4.6 % AC

Price Index on release of tender (April 2024) is \$676.47/tonne

Price Index during October 11 – 18, 2024 actual paving dates - \$605.66/tonne

Payment for adjustment for Hot Mix Items reduced by:

$$= ((\$676.47 - (\$605.66 + \$15.00)) \times (4,500 \times 4.6\%))$$

$$= 55.81 \times 207$$

$$= \$11,552.67$$

7. The quantity of new asphalt cement includes all grades of asphalt cement supplied by the Bidder with and without polymer modifiers. For each month in which a payment adjustment has been established, the quantity will be calculated using the Hot Mix quantity accepted into the work and its corresponding asphalt cement content as required by the job mix formula except for mixes which contain reclaimed asphalt pavement.
8. For mixes which contain reclaimed asphalt pavement, the quantity of new asphalt cement will be determined from the difference between the asphalt cement content required by the job mix formula and the asphalt cement content of the reclaimed asphalt pavement incorporated into the Hot Mix, as calculated by the Consultant or testing lab approved by the Consultant.
9. For mixes containing a liquid anti-stripping additive, the quantity of anti-stripping additive will be deducted from the quantity of new asphalt cement. No other deductions will be made for any other additives.
10. Bidders must bid the Hot Mix Asphalt Item using the cost of the PGAC specified. The Asphalt Cement Price Index is only a tool for qualifying Hot Mix prices and is not intended as a standard Asphalt Cement price to be incorporated into the Contract bid.
11. The payment adjustment calculated using this formula is full compensation for any and all PGAC grades specified.
12. If the Asphalt Cement Price Index has not changed by \$15.00 per tonne, then no payment adjustment is required.

3.4 **PATCHING AND TYING IN**

1. If and when patching is required, the area to be patched shall be cut out to its entire

thickness and repaved making sure that the edges are primed and compacting is equal to that outlined in O.P.S. Specification Form 310A.

2. Where "tying in" to existing asphalt pavement, neatly cut existing asphalt to full depth. Prime existing edges and "iron in" as required to provide neat, smooth and intersection to approved grades.

3.5 PROTECTION AND CLEAN-UP

1. At the completion of the work of this Section, remove from the site all tools, equipment, surplus material and debris.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. Provide concrete walks, curbs, and gutters where indicated on drawings.

1.2 REFERENCES & QUALIFICATIONS

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaw and the Ontario Ministry of Labour - all as currently amended. In case of conflict between Codes, the Ontario Building Code will govern.
2. All aggregates, equipment, methods and materials shall conform strictly to the Specifications of the Ministry of Transportation and Communications the City standards for which has jurisdiction.
3. Refer to ASTM C309-91, ASTM D698-91, CAN/CSA-A23.1-M90, CAN/CSA-A23.2-M90, OPSS 1010-93, OPSS 1308-83.
4. The provisions of OPSS 353 shall apply for Concrete Curb and Gutter except for the following:
 - Concrete shall be supplied by an approved Ready-Mix Concrete Supplier and shall be C-2 exposure class. Refer to CSA A23.1, Table 2 for further details.
5. The provisions of OPSS 350 and OPSS 351 shall apply for Concrete walks and Pads except for the following:
 - Concrete shall be supplied by an approved Ready-Mix Concrete Supplier and shall be C-2 exposure class. Refer to CSA A23.1, Table 2 for further details.

1.3 ALLOWANCES

1. n/a

1.4 SPECIAL PROTECTION

1. Barricade paved surfaces from traffic until surfaces are ready for normal traffic. Any damage or marked surfaces are to be removed and replaced by contractor.
2. Provide adequate protection of materials and work of this Section from damage by on site storage, weather, construction activities and other causes.
3. Protect the work of other sections from damage resulting from work of this section and protect the work of this section from damage resulting from work of other sections. Make good such damage to the satisfaction of the Consultant.
4. Contractor to exercise protective treatment and other precautions required through the construction period, to ensure that items listed will be without damage or deterioration other than normal weathering and wear.
5. If items are damaged as noted above, items are to be replaced / repaired at contractor's expense, not extra cost to the contract.

1.5 **WARRANTY**

1. The work under this section shall be under warranty in accordance with the Conditions of GC12.3 of the CCDC-2-2020 and as per SC 3.44 of City of Brantford'
2. s Supplementary conditions, but for a period of two years after the date of issue of the Certificate of Substantial Completion.

PART 2 - PRODUCTS

2.1 **MATERIALS**

1. Granular Base Course: conform to the Ontario Provincial Standard Specifications 314 and 1010, for material designated as Granular "A" and Granular "B".
2. Concrete: materials shall conform to Section 03300.
3. Joint Filler: for concrete walks 13 mm thick premoulded bituminous impregnated fibre conforming to ASTM D.1751-71a.
4. Joint Sealant: conform to CGSB 19-GP-24M Tremco THC900 self levelling urethane, or Sternson's Duoflex or Rubber Caulk 6000 by PRC Canada Inc.
5. Air Entrainment: admixture as manufactured by the Master Builders Co. or Sternson Ltd.
6. Concrete Curing: conform to Section 03300.
7. Concrete Sealer: boiled Linseed oil conforming to ASTM D-260-58T cut back with kerosene to form a 50/50 mixture.
8. Reinforcing materials shall conform to section 03300.

PART 3 - EXECUTION

3.1 **EXAMINATION**

1. Before work commences ensure that sub grading and filling as specified in Section 02215 and this section, has been correctly completed and that the subgrade is satisfactory in all aspects for placing of pavement. Report to Consultant any deficiencies before proceeding with work.
2. Verify that sub-grade densities, as may be specified in Section 02215 have been attained.
3. Provide additional compacted granular material where required.

3.2 **INSTALLATION**

- Concrete Work:
 1. Concrete work of this Section shall be executed generally as specified on Section 03300.
 2. The compressive strength of concrete after 28 days shall be 32 Mpa unless indicated or specified otherwise.
 3. The provisions of OPSS 351 and 353 shall apply except for the following: Concrete shall be supplied by an approved Ready-Mix Concrete Supplier and shall be C-2 exposure class. Refer to CSA A23.1, Table 2 for further details.

- Concrete Walks and Slabs:

1. Lay concrete for walks min. 125 mm (5") thick of 32 Mpa concrete on granular "A" compacted to 100% SPMDD and Granular "B" to 98% SPMDD. Entrained air mix shall be 6% ±1%.

NOTE: Granular "A" to be a minimum 150 mm (6") thick. Provide Granular "B" to be a minimum 200 mm (8") thick as required to bring existing grade up to underside Granular "A" Layer.

2. Finish wearing surface of walks with wood float or as directed by Consultant. Round off edges of slab with an edging tool.
3. Score surface of walks as indicated on drawings using proper tool or as directed by Consultant.
4. Turn down perimeter edges of sidewalks a min. 125 mm (5") in addition to sidewalk thickness, complete with 300 mm (12") thick compacted stone base. See drawings for additional details.
5. Slope walks away from building a minimum 1% toward storm sewer systems.
6. Slope all concrete walks to one side at ¼" (6 mm) per foot for drainage or as directed by the Consultant.
7. Widths of sidewalks as per site plan dimensions (not as per OPSD drawings).
8. OPSS 351.10.01 shall be extended to read:
The work shall include:
 - Excavation to provide for 150mm new Granular "A" Base (unless otherwise noted)
 - Supply, installation and compaction of 150mm of new Granular "A" Base (unless otherwise noted)
 - Adjustments of water valves and gas valves
 - Placement and curing of concrete sidewalk
 - Concrete shall be 125mm (typical), 150mm at driveways and 200mm thick at commercial entrances (unless otherwise noted).

- Concrete Curbs: (Barrier)

1. Curb design shall be as indicated on drawings, using a minimum 200 mm (8") thick base of compacted to refusal.
2. Entrained air in the concrete shall be 6%±1%.
3. Curb Type: as per OPSD 600.11, Concrete Barrier Curb.
4. The provisions of OPSS 353 shall apply except for the following: Concrete shall be supplied by an approved Ready-Mix Concrete Supplier and shall be C-2 exposure class. Refer to CSA A23.1, Table 2 for further details.

- Concrete Sidewalk Ramps/drop Curbs:

1. Provide drop curbs and barrier-free ramped access where drop curbs shown on drawings.
2. Refer to OPSD 310.030 and Drawings.

- Expansion Joints:
 1. Provide isolation joints filled with ½" (13 mm) joint filler at the following locations:
 - Where shown and noted on drawings.
 - At maximum 6000 mm (20'-0") intervals in both directions insidewalks and concrete paved areas.
 - Where two sidewalks intersect or meet.
 - Where a sidewalk or concrete pavement meets building or curb.
 - Refer also to OPSD 310.010 and OPSD 310.020.
 2. Install joint sealant at all expansion joints including locations where concrete abuts building (at entrances etc.).
- Contraction Joints:
 1. Provide contraction and dummy joints in sidewalks at locations shown on drawings or at approximately 1500 mm (5'-0") intervals in both directions. Refer to OPSD-310.010 and OPSD-310.020.
 2. Form joints by scoring concrete with "T" shaped tool providing a score 25 mm (1") deep.
- Concrete Curing:
 1. Concrete curing shall be done in accordance with Section 03300.
- Sealing of Concrete:
 1. Seal concrete surfaces using boiled linseed oil conforming to ASTM D-260-58T, cut back with kerosene to form a 50/50 mixture. Uniformly apply with spray, brush or roller in two (2) coats not exceeding 9.2 sq.m./litre (50 sq. yds. per gallon) per coat. Surface shall be clean, dry and at least two (2) weeks old. Air temperature above 7 degrees C (45 degrees F).

3.3 TACTILE WALKING SURFACE INDICATORS (TWSI)

1. Detectable warning plates shall be provided at all crossing locations. Plates shall be:
 - a. Uncoated cast iron material with natural "rust" finish
 - b. Set back a minimum of 150mm and a maximum of 200mm from the back of curb.
 - c. Placed with a minimum of 150mm from the outer edge of the sidewalk
 - d. Placed parallel with the curb radius. The use of radii panels' maybe required. Gaps between panels will not be accepted

Detectable warning plates shall be AODA compliant by:
East Jordan Iron Work
Ontario Branch
159 Sugar Maple Road
St George ON
519-448-3395

Or approved equivalent.

3.4 MAKING GOOD

1. Where new or existing concrete walks and curbs are disturbed or cracked, at the end of the project the Contractor shall remove concrete to the nearest joint in each direction and install new concrete to the satisfaction of the Consultant.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. Supply and install Storm and Sanitary Structures including but not limited to Manholes and Catch basins and maintain desired inverts and location as shown on drawings.

1.2 REFERENCES & QUALIFICATIONS

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaws and the Ontario Ministry of Labour - all as currently amended. In case of conflict between Codes, the Ontario Building Code will govern.
2. The Provisions of OPSS 401, 407, 410, 516, 517, and 1351 shall apply, unless indicated or noted differently herein.

1.3 SUBMITTALS

1. Provide submittals in accordance with Section 01300 – Submittals.
2. **Product Data:** For all products specified herein, including product data, manufacturer's specifications and installation instructions.
3. **Shop drawings:** For fabrication, design and supporting data shall be stamped by a qualified Professional Engineer registered in the Province of Ontario, show all locations required.
4. Submit design and supporting data at least 2 weeks prior to beginning Work where required.
5. Keep design and supporting data on site.

1.4 DELIVERY & STORAGE

1. Contractor shall check the materials upon delivery to assure proper material has been received.
2. Contractor shall prevent excessive mud, wet cement and like materials from entering the Structures
3. Contractor shall protect the materials from damage. Damaged material shall not be incorporated in the project.

PART 2 - PRODUCTS

2.1 MATERIALS

1. Storm Manholes shall conform to the 701 series OPSD.

2. Catch basins shall be in accordance with the 705 and 706 OPSD series. Single catch basins shall have 250mm internal diameter leads and double catch basins shall have 300mm internal diameter leads, unless otherwise noted on the drawings.
3. All PVC connections to Storm MH without rubber boots to have pipe adapter per OPSD 708.020.
4. Catch basin frame and grate casting shall be per OPSD 400.020.
5. Manhole frame and grate casting shall be per OPSD 401.010, closed.
6. Sanitary Manholes shall conform to the 700 series OPSD.
7. All PVC connections to MH without rubber boots to have pipe adapter per OPSD.
8. Subdrain pipe to be laid 20 feet (6m) in each direction at every catch basin shown onsite plans at bottom Granular 'B' into compacted subgrade base as shown on drawings.
9. Subdrains shall conform to the provisions of OPSS 405, except for the following:
 - All Subdrains shall be polyethylene pipe products in accordance with OPSS 405.
 - Subdrain bedding shall be Granular "A" 100% crushed limestone.
 - Subdrain backfill shall be 19mm clear stone.

PART 3 - EXECUTION

3.1 INSTALLATION

1. Excavation:
 1. Excavation work of this Section shall be executed generally as specified on Section 02220.
 2. Excavation Depth as noted on Drawings to allow for the desired inverts.
2. Structures:
 1. The installation of the Storm and Sanitary Structures to match inverts and location as noted on Drawings.
3. Compaction and Backfill:
 1. Compaction and Backfill work of this Section shall be executed generally as specified on Section 02220.

3.2 CLEAN-UP

1. The Contractor shall immediately repair any damage to the works of this project and/or neighbouring properties that results from the inadequacy of the temporary outlet.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. Supply and install granular A for bedding around watermain and apparatuses, or as indicated herein.
 2. Supply and install all watermain, required fittings, valves, hydrants and restrained joints and maintain desired depth and location shown on Drawings

1.2 REFERENCES & QUALIFICATIONS

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaws and the Ontario Ministry of Labour - all as currently amended. In case of conflict between Codes, the Ontario Building Code will govern.
2. The Provisions of OPSS 401 (revised from OPSS 514), 441 (revised from OPSS 701), and 517, unless indicated or noted differently herein.
3. Anodes shall be provided for all metallic components in compliance with OPSS 442 (revised from OPSS 702) and OPSD 1109.013.

1.3 SUBMITTALS

1. Provide submittals in accordance with Section 01300 – Submittals.
2. Product Data: For fittings, valves, hydrants, mechanical restraints, wire lugs, etc.
3. Commissioning Plan: For review and approval by Owner and Consultant.

1.4 DELIVERY & STORAGE

1. Contractor shall check the materials upon delivery to assure proper material has been received.
2. Contractor shall prevent excessive mud, wet cement and like materials from entering the pipes.
3. Contractor shall protect the materials from damage. Damaged material shall not be incorporated in the project.

1.5 SEQUENCING & SCHEDULING

1. Materials for watermain installation shall conform to the Municipal Water Requirements.
2. The Contractor shall take due precaution during the chlorination testing, charging and flushing of the watermain so as not to cause contamination to the municipality's distribution system, including the temporary supply of a certified backflow prevention device. The Contractor shall take all necessary precautions to prevent freezing of all exposed mains and laterals. The Contractor shall provide a certified back-flow device at all connections to the existing distribution system.

3. Prior to testing, the contractor shall submit a Water Commissioning Plan in accordance with the Municipality Standards for Commissioning of New Watermains in accordance with the Municipal Water Requirements Document. No testing can be scheduled or completed until this plan has been reviewed and approved by the Municipality.
4. Testing shall be in accordance with AWWA Standards for Disinfecting Watermains (C651-05) (<http://www.awwa.org/store/standards.aspx>) and the Municipality's bacteriological testing procedures and checklist that are included with this document.
5. No existing watermain or valve shall be operated by the Contractor. Water valve operations are to be coordinated with the Municipality to schedule shut off. The Contractor shall notify all business and property owners 48 hours prior to plant disruption and shall ensure that these properties and businesses are inconvenienced as little as possible.
6. All fittings (if applicable) shall have mechanically restrained joints. The minimum lengths on each side of fittings for which all pipe joints are to be restrained are noted on the drawings. All hydrant joints and along hydrant leads shall be restrained.

PART 2 - PRODUCTS

2.1 MATERIALS

1. Insulation over storm pipe shall be Dow Styrofoam Highroad 60 Extruded Polystyrene Insulation or approved equivalent, where indicated on the drawings.
2. Insulation shall be at the width and thickness noted in the table below, unless otherwise noted on the drawings.

Depth of Cover (m)	Width of Insulation (m)	Thickness of Insulation (mm)
1.20 < 1.50	1.2	50
1.05 to 1.19	1.2	50
0.9 to 1.04	1.2	100
< 0.89	1.5	100

3. PVC Watermain material shall be:
50mm diameter – PEX SDR9 CTS certified CSA B137.5 and AWWA C904.
150mm – 300mm diameter - PVC DR18 certified CSA B137.3 and AWWA C900.
Over 350mm diameter – PVC DR25 certified CSA B137.3 and AWWA C905.
4. For PVC watermain, services are to be connected to the watermain using pre-manufactured tees or tapped with service saddles.
5. Tracer wire can be white. Any variations from this list must be approved in writing by the Owner and the Consultant.
6. Bedding to be Granular "A".

PART 3 - EXECUTION

3.1 INSTALLATION

1. Excavation:

1. Excavation work of this Section shall be executed generally as specified on Section 02220.
2. Excavation Depth to conform to Municipality Standards, unless noted otherwise on drawings.
2. Pipes:
 1. Connection point of Watermain shall be uncovered, and the existing location and depth to be measured prior to start of installation. Any discrepancies to what's noted on the drawing, notify the Consultant immediately.
 2. Bedding to be placed from 150mm below the bottom of the pipe to 300mm above the top of the pipe, with proper Compaction.
3. Fittings, Valves, Hydrants, and Restraints
 1. Valves to be installed at locations noted on drawings
 2. Fittings and Joints to be restrained, as per restraint table noted on Drawings.
 3. All Hydrants shall be free draining. The contractor shall remove all water from the hydrants upon completion of the commissioning process.
 4. All non-coated metal surfaces on all fittings, valves, restraints and hydrants shall be completely wrapped in Denso Tape.
4. Compaction and Backfill:
 1. Compaction and Backfill work of this Section shall be executed generally as specified on Section 02220

3.2 REMOVAL OF EXISTING SERVICES

1. Existing Services noted for removal shall be fully excavated and removed back to the main. Existing services marked for removal may be grouted and abandoned at the direction of the Consultant.

3.3 CLEAN-UP

1. The Contractor shall immediately repair any damage to the works of this project and/or neighbouring properties that results from the inadequacy of the temporary outlet, at no additional cost to Owner.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. Supply and install granular A for bedding around sanitary pipes, or as indicated herein.
 2. Supply and install sanitary pipe and maintain desired slope and location as shown on drawings.

1.2 REFERENCES & QUALIFICATIONS

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaws and the Ontario Ministry of Labour - all as currently amended. In case of conflict between Codes, the Ontario Building Code will govern.
2. The Provisions of OPSS 401, 407, 410, 516, and 517 shall apply, unless indicated differently herein.

1.3 SUBMITTALS

1. Provide submittals in accordance with Section 01300 – Submittals.

1.4 PRICING

1. The Contractor shall include in the unit price for the installation of new sanitary sewer any and all costs associated with maintaining the flow of sanitary sewage from upstream of the working area to downstream of the working area and maintaining connections of the existing sanitary services to the collection system. This includes all equipment and materials required.
2. Under no circumstances will additional costs be accepted for the provision of a temporary system to maintain continuous flow of the sanitary sewer.
3. The Contractor shall include in the cost for connecting to existing services and dye testing of all existing sanitary service connections to verify usage prior to connection to the new sanitary sewer.

1.5 DELIVERY & STORAGE

1. Contractor shall check the materials upon delivery to assure proper material has been received.
2. Contractor shall prevent excessive mud, wet cement and like materials from entering the pipes.
3. Contractor shall protect the materials from damage. Damaged material shall not be incorporated in the project.

1.6 SEQUENCING & SCHEDULING

1. The Contractor shall satisfy themselves with respect to the most suitable method and shall be solely responsible for the design, installation, maintenance and removal of any temporary system required for the continuous operation of the sanitary sewer system.
2. The Contractor shall make every reasonable effort to avoid the need to bypass sewage flow by means of a pump overnight. Should this be required, the Contractor shall provide sufficient manpower, equipment and stand by pumps onsite through the night to maintain operation of the pumping system.
3. In the event that the Contractor utilizes the new sanitary main to maintain the existing sanitary sewer flow, the Contractor shall make sure that the new line is free from all debris regardless of the source and take any and all necessary steps to prevent any debris from entering the sanitary sewer system.
4. The Contractor shall make every reasonable effort to identify any existing service connection that cannot be verified by dye testing.

PART 2 – PRODUCTS

2.1 MATERIALS

1. Insulation over storm pipe shall be Dow Styrofoam Highroad 60 Extruded Polystyrene Insulation or approved equivalent, where indicated on the drawings.
2. Insulation shall be at the width and thickness noted in the table below, unless otherwise noted on the drawings.

Depth of Cover (m)	Width of Insulation (m)	Thickness of Insulation (mm)
1.20 < 1.50	1.2	50
1.05 to 1.19	1.2	50
0.9 to 1.04	1.2	100
< 0.89	1.5	100

3. Sanitary sewer main pipe shall be PVC SDR 35 as per OPSS 1841 and certified CSA B182.2
4. Sanitary service pipe shall be PVC SDR 28 as per OPSS 1841 and certified CSAB182.2.
5. Bedding material shall be Granular "A".

PART 3 - EXECUTION

3.1 INSTALLATION

1. Excavation:
 1. Excavation work of this Section shall be executed generally as specified on Section 02220.
 2. Excavation Depth as noted on Drawings to allow for the design slope shown and proper depth of bedding below
2. Pipes:

1. Connection Point of sewer shall be uncovered, and the Existing invert to be measured prior to start of installation. Any discrepancies to inverts noted on the drawing, notify the engineer immediately.
2. Bedding to be placed from 150mm below the bottom of the pipe to 300mm above the top of the pipe, with proper compaction.
3. The installation of the pipes between manholes to maintain desired slope as noted on drawings
3. Compaction and Backfill:
 1. Compaction and Backfill work of this Section shall be executed generally as specified on Section 02220

3.2 REMOVAL OF EXISTING SERVICES

1. Existing Services noted for removal shall be fully excavated and removed back to the main.
2. Removals at the main shall be bricked and mortared if concrete or capped if the sewer main is PVC.
3. Restoration in the right of way for removals shall be included in the base scope of work and shall be completed.

3.3 CLEAN-UP

1. The Contractor shall immediately repair any damage to the works of this project and/or neighbouring properties that results from the inadequacy of the temporary outlet, at no additional cost to Owner.

END OF SECTION

3.1 CLOSED CIRCUIT TELEVISION INSPECTION OF PIPELINES

1. The provision of OPSS 409 shall apply except for the following:
 1. The Contractor shall not construct or place asphalt until the Consultant has reviewed the television inspection.
 2. The Contractor shall flush all sewers with an approved power flusher prior to making the television inspection. The Consultant shall deem a report which indicates that the sewers contain any amount of debris, sediment, or any other foreign material, unacceptable. In this case, the sewers shall be re-flushed and the foreign material removed, and re-televised.
 3. It shall be the responsibility of the Contractor to arrange for a source of water for flushing.
 4. Any repeat television inspections for whatever reason, shall be at the expense of the Contractor.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. The Disposal of Surplus or Unsuitable or Contaminated Material

1.2 REFERENCES & QUALIFICATIONS

1. Conform to the latest Ontario Building Code, Ontario Regulation 406/19 (Excess Soil), The Construction Safety Act, Local Bylaw and the Ontario Ministry of Labour - all as currently amended except where indicated otherwise on drawings or specified herein. In case of conflict between Codes, the Ontario Building Code will govern.
2. Do not use or transport, on or off site, soil material until written report of soil test results are reviewed by the Consultant and where applicable, the designated Qualified Person.

1.3 SUBMITTALS

1. Provide submittals in accordance with Section 01300 – Submittals.

1.4 PROJECT SITE CONDITIONS

1. **Existing Conditions:**
 1. Examine relevant geotechnical reports included with the Contract.

PART 2 - PRODUCTS

2.1 MATERIALS

1. **Granular material:** adhere to OPSS 1010.
2. **Excess Soil:** Direction to be provided by Qualified Person and Consultant.

PART 3 - EXECUTION

3.1 PREPARATION/PROTECTION

1. The contractor shall haul all surplus or unsuitable excavated material to an approved disposal site at his own expense. The Contractor shall submit to the Owner a signed agreement approving the disposal of material.
(See OPSF-1800 Disposal of Fill Release Form).

3.2 MATERIALS TESTING

1. The Contractor shall retain the services of a materials testing firm accredited by the Canadian Council of Independent Laboratories (CCIL) to perform all materials testing as specified. Where tests or inspections by designated testing laboratory reveal work not in accordance with the contract requirements, the Contractor shall pay costs for additional tests or inspections as Consultant may require to verify acceptability of corrected work.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. At all sod, grassed and landscaped area locations as indicated on drawings.

1.2 TESTING

1. The Contractor shall test all imported topsoil from all proposed sources.
2. Collect one (1) topsoil sample from each pile to be tested and provide to the testing lab according to the following guidelines:
 - a. Each sample shall be min. one (1) litre in volume.
 - b. Obtain ¼ litre sample at a minimum of four different locations within the main body of the pile and thoroughly mix together to create the one (1) litre sample for testing.
 - c. Label each sample with the name of the project and location of the soil sample.
3. Arrange and pay for testing to be carried out by:
 - a. Agri-Food Laboratories, 1-503 Imperial Rd. N., Guelph, Ont., N1H 6T9, 1-800-265-7175, tel: (519) 837-1600, fax: (519) 837-1242, www.agtest.com,
 - b. A&L Canada Laboratories Inc., 136 Jetstream Rd, London, Ont. N5V 3P5, tel: (519) 457-2575, fax: (519) 457-2664, email: alcanadalabs@alcanada.com
 - c. or an approved equal independent testing company.
4. Conduct a Basic Topsoil Test from each proposed source which includes: Soil Texture (% Sand, % Silt, % Clay), Total Salts, Organic Matter, pH, Bph, available Nitrogen, Phosphorus, Potassium, Magnesium, Calcium, CEC, Chloride, Sodium, and SAR. If topsoil source is from a former farm field, also conduct a test for Atrazene. Obtain recommendations for amendments and the quantities and type of fertilizers needed to eliminate the deficiencies made evident by the testing.
5. Submit the results of soil testing and fertilizer recommendations to the Project Manager for approval before commencing with the work.
6. If the topsoil source is exhausted do not use topsoil from a new source until it has been tested and approved for use.
7. Provide topsoil results at least 2 weeks prior to delivery to the site
8. An additional soil test may be required after the soil has been amended at the direction of the Landscape Consultant.
9. Submit the soil testing report to the Landscape Consultant for approval before commencing work.
10. Conform to recommendations from soil testing agency with respect to improvement of tested topsoil.

11. Adjust fertilizer requirements and rates as well as addition of other additives, to conform to soil testing recommendation, at no extra cost to the contract.

PART 2 - PRODUCTS

2.1 MATERIALS

1. Native Topsoil: Existing topsoil found on the site, stripped, screened, and stockpiled for re-use in this contract.
2. Imported Topsoil: a fertile, friable, natural loam (A horizon layer), capable of sustaining vigorous plant growth, free of subsoil contamination, roots and stones over 50mm diameter, reasonably free of weeds (as determined by the Project Manager), and falling within the following guidelines:

Soil Texture Range: (OMAFRA soil texture triangle)	loam to sandy loam	clay loam
pH range:	5.5 to 7.9	5.5 to 7.9
Total Salts (mmhos/cm)	less than 1.5	less than 1.5
Organic Matter (%)	4% to 15%	4% to 15%
N - Nitrogen (ppm)	See below	See below
P - Phosphorus (ppm)	10 – 60	10 – 60
K - Potassium (ppm)	80 – 250	80 – 500
Mg - Magnesium (ppm)	100 – 300	100 – 600
Ca - Calcium (ppm)	1000 – 4000	1000 – 7000
Na - Sodium (ppm)	less than 200	less than 200
Cl - Chloride (ppm)	less than 100	less than 100
SAR - Sodium Absorption Rate	less than 15	less than 15

3. Nitrogen: Provide the required amount of nitrogen as identified in the soil test report.
4. Fertilizer: 5-20-20 slow-release commercial fertilizer with Sulphur coated Urea, or as determined by the soil test report.

PART 3 - EXECUTION

3.1 PREPARATION OF EXISTING GRADES

1. Grade soil, eliminating uneven areas and low spots, ensuring positive drainage.
2. Remove debris, roots, branches, stones in excess of 50 mm diameter and other deleterious materials from the existing grade. Remove soil contaminated with calcium chloride, toxic materials and petroleum products. Remove debris which protrudes more than 75 mm above surface. Dispose of removed material off site.
3. Scarify the approved dry, un-frozen sub-grade to depth of 50 - 100 mm. Cross cultivate those areas where equipment used for hauling and spreading has compacted soil.
4. Dispose of excavated material on site as directed, so as not to contaminate any topsoil or imported soils used for hauling and spreading has compacted soil.

3.2 FERTILIZING

1. Mix fertilizer with imported topsoil or cultivate to a minimum depth of 150mm to mix fertilizers and spread topsoil.

3.3 SPREADING OF TOPSOIL

1. Place topsoil after Consultant has accepted subgrade.
2. Spread topsoil in uniform layers not exceeding 150 mm, over unfrozen subgrade free of standing water over scarified subgrade.
3. Spread topsoil to a minimum 150mm depth after settlement and 80% compaction.
4. Manually spread topsoil around trees, structures, shrubs and obstacles.

3.4 FINE GRADING OF TOPSOIL

1. Grade topsoil to eliminate rough spots and low areas and ensure positive drainage.
2. Prepare loose friable bed by means of cultivation and subsequent raking.
3. Topsoil shall be placed to a grade which allows sod to be installed at the final lines and levels as indicated on the Contract Drawings.
4. Provide a finished topsoil surface that is smooth and firm against footprints, with a fine, loose texture before sod is placed.
5. Consultant will inspect topsoil in place and determine acceptance of material, depth of topsoil and finish grading.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. Install sod (including any noted seed, seeded, grass, grassed wording), at areas indicated on drawings and where existing sod and grassed areas to remain but are damaged or disturbed by any construction or demolition works.

1.2 SUBMITTALS

1. Provide submittals in accordance with Section 01300 – Submittals.
2. Submit one square meter (yard) sample sod to project site for approval prior to delivery of sod.

1.3 DELIVERY & STORAGE

1. Schedule delivery in order to keep storage on the job site to a minimum without causing delays.
2. Deliver, unload and store sod on pallets.
3. Deliver sod to site within 24 hours of being lifted and lay sod within 36 hours of being lifted.
4. Do not deliver small, irregular or broken pieces of sod.
5. During dry weather protect sod from drying and water sod as necessary to ensure its vitality and prevent dropping of soil in handling. Sod which dries out will be rejected.

1.4 SEQUENCING & SCHEDULING

1. Schedule sod laying to coincide with topsoil operations.
2. Do not begin to install sod without inspection and approval of topsoil preparation by Landscape Architect. Topsoil to be free of stones greater than 20mm diameter, debris and weeds and fine graded to grades indicated on plan prior to start of sodding operation.

1.5 APPROVAL

1. Obtain the Landscape Architect's approval of sod at source, where there is not landscape architect, Consultant is to approve.
2. Sodded areas will be accepted by the Landscape Architect at the end of the maintenance period provided that:
 1. Sod is properly established.
 2. Turf is free of bare or dead spots and weeds.

3. Sodded areas have been cut within 24 hours prior to acceptance inspection.

PART 2 - PRODUCTS

2.1 MATERIALS

1. Turf grass nursery sod: specially sown and cultivated in nursery field all in compliance with the specifications latest issue of the Nursery Sod Growers Association of Ontario for (A) Number One Kentucky Bluegrass-Fescue Sod.

PART 3 - EXECUTION

3.1 WORKMANSHIP

1. Keep site well drained.
2. Clean up immediately any soil or debris spilled onto pavement and dispose of all deleterious materials off the site.
3. Lay sod within limit of work and where existing turf to remain is damaged during construction.

3.2 LAYING OF SOD

1. Lay sod during growing season. Sodding at freezing temperatures or on frozen ground is not acceptable.
2. Sodding during dry weather is acceptable only if sufficient and continuous watering is assured. The contractor is responsible to supply water and apply water as needed to ensure establishment.
3. Where slippage of sod is likely to occur because of the degree of slope pegging is required and shall be at no extra cost to the Owner. Drive pegs flush with sod once sod has become established.
4. Obtain the approval of the Landscape Architect of topsoil spreading and fine grading prior to beginning sodding. Topsoil is to be weed-free. Cultivate to a depth of 100mm and remove weeds prior to installing sod.
5. Lay sod even with adjoining areas. The rows shall have staggered joints. Butt sections closely without overlapping or leaving gaps between sections. Cut out irregular or thin sections.
6. Provide close contact between sod and soil by means of light roller. Heavy rolling to correct irregularities in grade is not permitted.
7. Supply water and water immediately after laying to obtain moisture penetration through sod into top 150mm of topsoil.
8. Provide adequate protection of sodded areas against erosion and other damage. Remove this protection after sod has become established and if approved by the

Landscape Architect.

3.3 MAINTENANCE

1. Maintain sodded areas for 60 days until acceptance of sodding work. Maintenance includes but is not limited to weeding, fertilizing as required by soil tests, cutting as required to maintain sod at a maximum height of 60mm and watering. Sod is to be cut at least twice during the maintenance period.
2. Water sodded areas to sustain its prosperous growth and prevent deterioration. Contractor is responsible for supplying water to the site.
3. All sodded areas shall be guaranteed for a period of one (1) year from the date of acceptance.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. Provide all labour, materials, equipment, access cooperation and services to allow the testing of concrete and concrete reinforcement.
 2. The scope of the required quality assurance testing described in this section is to inform the Contractor of the type and scope of testing on this project and provide for appropriate allowances.

1.2 REFERENCES & QUALIFICATIONS

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaw and the Ontario Ministry of Labour - all as currently amended.
2. **References: (All as currently amended)**
 1. National Building Code of Canada 2020 (NBCC)
 2. Ontario Building Code, 2012 (OBC)
 3. Canadian Standards Association (CSA)
 1. CAN/CSA-A23.1-09/A23.2-09, Concrete Materials and Methods of Concrete Construction, Methods of Test and Standard Practices for Concrete.
 2. CSA A23.3-04, Design of Concrete Structures.
 3. CSA S413-07, Parking Structures.
 4. Ontario Provincial Standard Specification (OPSS)
 1. OPPS 1442, Material Specification for Epoxy Coated Reinforcing Steel Bars for Concrete.
 2. Ontario Provincial Standard Specification (OPSS) 1443 Material Specification for Organic Coatings for Reinforcing Steel Bars for Concrete.
 5. Reinforcing Steel Institute of Canada (RSIC)
 1. RSIC-2004, Reinforcing Steel Manual of Standard Practice.

1.3 TESTING & INSPECTION APPOINTMENT

1. Contractor will appoint the independent CSA approved inspection and testing agency in accordance with the terms of the Contract. Testing agency to be submitted and approved in writing by the Owner and Consultant.
2. Testing as outlined below shall be paid for in accordance with the Contract.

PART 2 - PRODUCTS

2.1 RESPONSIBILITY OF THE PROJECT CONTRACTOR

1. The Contractor shall cooperate fully with the terms of the Project Agreement.
2. The Contractor shall give the independent inspection and testing agency at least 48 hours prior notice of a concrete placement.
3. It is the responsibility of the Contractor to provide a finished product that meets the specification. Additional testing will be required for initial tests that indicated the concrete failed to meet the specification requirements.
4. The Contractor shall be responsible for costs associated with additional testing resulting from rejected work, or proposed alternatives, and shall be responsible for the costs of remedial work.

2.2 RESPONSIBILITY OF THE OWNER REPRESENTATIVES

1. The independent inspection and testing agency has the authority to, and is expected to, reject any concrete installation that does not meet the specification.
2. Low 7-day and 28-day concrete tests shall be brought to the immediate attention of the Consultants.

PART 3 – EXECUTION

3.1 EXAMINATION

1. All concrete strength tests shall be numbered consecutively and the cylinders marked as follows:
 1. 7-day test: Marked "A"
 2. 28-day test: Two (2) cylinders marked "B" and "C"
 3. 56-day test: When required, two cylinders marked "D" and "E"
2. All test reports shall record:
 1. Name of project;
 2. Date and time of sampling;
 3. Name of supplier;
 4. Delivery truck number;
 5. Batch time and discharge time;
 6. Identification of sampling and testing technicians;
 7. Exact location in the structure of the concrete sampled;
 8. Design strength of concrete sampled;
 9. Admixtures, cement type, and maximum aggregate size;
 10. Air and concrete temperature;
 11. Slump and air content.
3. All field cured cylinders shall be marked "F"
4. Slump tests shall be performed prior to the addition of superplasticizers.
5. Tests for slump and air content shall be taken with each strength test and as required.

3.2 REGULAR TESTING – CONCRETE

1. To conform to the Standards, except each test shall consists of three (3) test cylinders:
 1. One (1) for 7-day strength
 2. Two (2) for 28-day strength
2. Testing for concrete with SCM's to reduce the cement content (greater than 30% cement reduction) to conform to the Standards, except each test shall consist of 4 cylinders:
 1. One (1) for 7-day strength
 2. One (1) for 28-day strength
 3. Two (2) for 56-day strength

3.3 FIELD CURED CYLINDERS

1. Field cured cylinders shall be stored on the floor right below the slab they represent and be protected against wind unless the floor below is heated, in which case they shall be stored on top of the representative slab but covered with a plywood box. The cylinders are to be undisturbed at this location until picked up by the independent testing and inspection agency.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. Provide all labour, methods, equipment and accessories to supply, install, erect and remove as appropriate, formwork, accessories and temporary shoring or reshoring necessary to construct the concrete structure shown on drawings, specified herein, and as required for the complete and proper execution of Work of this Section, including, but not limited to, the following:
 1. shoring, falsework, and reshoring;
 2. plywood, glass fiber reinforced or metal forms;
 3. slip forms;
 4. flying forms;
 5. void forms;
 6. vertical drainage pans;
 7. round column fiber forms;
 8. form ties, chamfers, jointtape;
 9. lintel and shelf angle anchors;
 10. PVC, Bentonite or Mastic waterstops for construction joints;
 11. PVC waterstops for expansion joints;
 12. expansion joint filler

1.2 REFERENCES & QUALIFICATIONS

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaw and the Ontario Ministry of Labour - all as currently amended.
2. See Standard Construction Document CCDC 2 for related items.
3. See Supplementary Conditions in conjunction with item 1.2.1 above.
4. **Related Sections:**
 1. Section 03200 Concrete Formwork
 2. Section 03300 Cast in Place Concrete
 3. Section 03345 Concrete Floor Finishes
5. **References: (All as currently amended)**
 1. Concrete formwork done in accordance with CSA A23.1/A23.2 Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete except where specified otherwise.
 2. Formwork design done in accordance with CSA-S269.1, Falsework and Formwork.
 3. Falsework in accordance with CSA-S269.1, Falsework and Formwork, except where specified otherwise.

4. Notwithstanding the noted references, the most current accepted standard shall apply. The contractor shall notify the Consultant immediately in the event of a discrepancy or error in standards notation.

1.3 **SUBMITTALS**

1. Provide submittals in accordance with Section 01300 – reinforced concrete construction.
2. Shop Drawings: shop drawings are not required for footing and wall construction. Indicate method and schedule of construction, materials, arrangement of joints, ties, shores, liners, and locations of temporary embedded parts.

PART 2 - PRODUCTS

2.1 **MATERIALS**

1. Formwork:
 1. Falsework materials: to CSA-S269.1.
 2. Footing Formwork: to CSA-S269.1, construction grade spruce. Rough lumber may be used for footing construction.
 3. Wall Formwork: to CAN/CSA-0325 and O86.1, COFI Exterior Douglas Fir Plywood, G1S, COFIFORM-PLUS panels, polymer coated.
 4. Tubular column forms (if required): round, spirally wound laminated fiber forms, internally treated with release agent.
 6. Wall form ties: removable or snap-off metal ties, fixed or adjustable length, free of devices leaving holes larger than 25 mm dia. in concrete surface.
 7. Form release agent: chemically active release agents containing compounds that react with free lime present in concrete to provide water insoluble soaps, colourless.
2. Waterstops:
 1. To CGSB 41-GP-35M, types 2 and 3:
 2. Construction Joints, Internal Waterstop:
 1. Extruded 150 mm [6"] wide, ribbed, tapered thickness varying from 9.5 mm [3/8"] minimum near centre to 6.4 mm [1/4"] minimum near edge.
 3. Construction Joints, External Waterstop:
 1. Extruded 240 mm [9.5"] wide by 4.5 mm [0.18"] thick.
 4. Expansion Joints:
 1. Internal waterstop with centre bulb, extruded ribbed, 229 mm [9"] wide; tapered thickness varying from 9.5 mm [3/8"] minimum near centre, to 6.4 mm [1/4"] minimum near edge, with 20 mm [3/4"] inside diameter centre bulb.

3. Expansion 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 D1752, and compatible with polysulphide urethane, polyepoxide urethane, or neoprene sealants, as applicable.
 3. Dovetail anchor slots:
 1. Minimum 0.6 mm thick galvanized steel with insulation filled slots.
4. Form Spacers:
 1. Stay-in-place form spacers exposed to weather, earth, or moisture may not be made of wood, and must be corrosion and decay resistant.

PART 3 - EXECUTION

3.1 FOOTING INSPECTION

1. Consultant shall be given timely notice to inspect subsoil conditions.
2. Prior to constructing any formwork for footings or placing skim slabs, Consultant shall inspect and approve footing bearing levels.
3. General Contractor shall thoroughly review any supplied geotechnical investigation data for the subject site. It is known that loose native soils may exist at the elevation of proposed footings for the foundations. Soil density improvements, deeper foundations, or other means may be required to ensure foundation bearing on competent soils.

3.2 FORMWORK CONSTRUCTION

1. Verify lines, levels and column centres before proceeding with formwork and ensure dimensions agree with drawings.
2. Co-operate with other trades on concrete related work.
3. Only formwork that is sound shall be used. Frayed lumber or plywood that is delaminating shall not be used.
4. Construct forms to produce finished concrete conforming to shape and dimensions on the drawings.
5. Construct falsework, if required, in accordance with CSA S269.1.
6. Construct chases, openings and slots as required.
7. Set sleeves, ties, anchor bolts, pipe hangers, inserts, etc., as required.
8. Check locations of installations against architectural, mechanical and electrical drawings.
9. Use plywood for wall forms. Use internal wall ties.

10. Use 25 mm chamfer strips of external corners of all walls, beams, etc.
11. Align form joints and make watertight. Keep form joints to minimum.
12. Clean formwork before placing concrete.
13. Brace all forms to prevent any movement during concrete placement, especially if concrete vibrators are to be employed.
14. Clean out all debris at the bottom of the formwork.
15. Remove all loose, frozen, wet material and water from the formed area prior to pouring concrete.
16. Apply form coating and release agent to contact surface of formwork before use. Apply uniformly to surfaces.
17. **Obtain Consultant's and authorities having jurisdiction approval before placing any concrete.**

3.3 REMOVAL OF FORMS

1. Retain formwork until concrete attains 70 % of the specified 28 day strength.
2. Carefully remove the forms so as not to damage the concrete surfaces.
3. Clean forms for reuse.
4. Remove all wall snap ties and fill in.
5. Patch any "honeycombed" concrete as soon as the forms are removed.
6. At completion, remove formwork, accessories and debris from site.

3.4 WATERSTOPS

1. Install waterstops to provide continuous water seal. Do not distort or pierce waterstop to hamper performance. Do not displace reinforcement when installing waterstops. Tie waterstops rigidly in place.
2. Splice in accordance with the manufacturer's printed instructions and as follows. Only straight heat-sealed butt joints permitted in field. Shop weld corners and intersections.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. Provide all labour, materials, methods and equipment to supply, fabricate, and place concrete reinforcement and accessories, specified herein, and as required for a complete and proper installation including, but not limited to, the following:
 1. Black, epoxy coated and glass fibre-reinforced polymer (GFRP) deformed bar reinforcement;
 2. welded wire fabric;
 3. wire ties for columns or masonry core fills;
 4. mechanical connection tension couplers, mechanical connection compression couplers or end bearing splices;
 5. chairs and support bars

1.2 REFERENCES & QUALIFICATIONS

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaw and the Ontario Ministry of Labour - all as currently amended. In case of conflict between Codes, the Ontario Building Code will govern.
2. **Source Qualifications:** Upon request, inform Consultant of proposed source of material to be supplied.
3. See Standard Construction Document CCDC 2 for related items.
4. See Supplementary Conditions in conjunction with item 1.2.2 above.
5. **Reference Standards:**
 1. The latest edition of the following Reference Standards, Codes, and Acts shall govern Work of this Section. Standards referenced within the Standards noted below are to apply even if they are not included in the list.
 1. National Building Code of Canada 2015 (NBC)
 2. Ontario Building Code, 2012 (OBC)
 3. American Concrete Institute (ACI):
 1. ACI 315R-18, Guide to Presenting Reinforcing Steel Design Details.
 2. ACI 440.11-22, Building Code Requirements for Structural Reinforced with Glass Fiber-Reinforced Polymer (GFRP) Bars
 4. American Society for Testing and Materials International (ASTM).
 1. ASTM A82/A82M-07, Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
 2. ASTM A143/A143M-07, Standard Practice for Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement.

3. ASTM A185/A185M-07, Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.
4. ASTM A497-A497M-07, Standard Specification for Steel Welded Wire Reinforcement, Deformed, for Concrete.
5. ASTM A775/A775M-07b, Standard Specification for Epoxy-Coated Steel Reinforcing Bars.
6. ASTM D3963/D3963M-01(2007), Standard Specification for Fabrication and Jobsite Handling of Epoxy-Coated Steel Reinforcing Bars.
7. ASTM A820/A820M-11 Standard Specification for Steel Fibers for Fiber-Reinforced Concrete.
8. ASTM C1116/C1116M-10a Standard Specification for Fiber-Reinforced Concrete.
9. ASTM D7957 Standard Specification for Solid Round Glass Fiber Reinforced Polymer Bar for Concrete Reinforcement.
5. Canadian Standards Association (CSA)
 1. CAN/CSA-A23.1/A23.2, Concrete Materials and Methods of Concrete Construction, Methods of Test and Standard Practices for Concrete.
 2. CSA A23.3, Design of Concrete Structures.
 3. CSA G30.18 Carbon Steel Bars for Concrete Reinforcement.
 4. CSA G30.3-M, Cold Drawn Steel Wire for Concrete Reinforcement.
 5. CSA G30.5-M, Welded Steel Wire Fabric for Concrete Reinforcement.
 6. CAN/CSA-G40.20/G40.21, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 7. CAN/CSA-G164, Hot Dip Galvanizing of Irregular Shaped Articles.
 8. CSA W186, Welding of Reinforcing Bars in Reinforced Concrete Construction.
 9. CSA S806:12 (R2021), Design and Construction of Building Structures with Fibre-Reinforced Polymers
2. Place reinforcement according to Manual of Standard Practice by the Reinforcing Steel Institute of Ontario.
3. The omission of notation on the contract drawings does not relieve the Contractor of the requirements of this specification.
4. Notwithstanding the noted references, the most current accepted standard shall apply. The contractor shall notify the Consultant immediately in the event of a discrepancy or error in standards notation.

1.3 **SUBMITTALS**

1. Provide submittals in accordance with Section 01300.

2. Environmental Product Declarations (EPD): Submit a EPD for the Glass Fibre-Reinforced Polymer Reinforcement.
3. Shop Drawings:
 1. If project only contains reinforced footings no shop drawings are required.
 2. Indicate sizes, spacing, location and quantities of reinforcement and mechanical splices, with identifying code marks to permit correct placement without reference to structural drawings. Indicate sizes, spacing and location of chairs, spacers and hangers. Do drawings in accordance with Reinforcing Steel Manual of Standard Practice - by Reinforcing Steel Institute of Ontario.
 3. Detail placement of reinforcing where special conditions occur.
 4. Design and detail lap lengths and bar development lengths to CSA A23.1/A23.2.

PART 2 - PRODUCTS

2.1 MATERIALS

1. Reinforcing steel: Grade 400, deformed bars conforming to CAN/CSA G30.18, Carbon Steel Bars for Concrete Reinforcement.
2. Epoxy Coating for Reinforcement: An electrostatic application of epoxy protective coating conforming to requirements of OPSS 1442 and 1443. Verify with drawings if the use of epoxy coated reinforcement is required.
3. Glass Fibre-Reinforced Polymer Reinforcement: Grade II (minimum) ribbed bars conforming to CSA S806:12 (R2021), Design and Construction of Building Structures with Fibre-Reinforced Polymers.
4. Chairs, bolsters, bar supports, spacers to CSA A23.1/A23.2. In the case of concrete exposed to view or weather the accessories shall be such that no metal is permitted to come closer than 40 mm (1 5/8") from a formed face and 50 mm (2") from a troweled surface. Use precast concrete supports for exposed concrete beams and soffits and concrete cast against soil/rock. Precast concrete supports shall be made of concrete of quality and strength at least equal to that specified for the member in which they are used.
5. Cold-drawn annealed steel wire ties: to CSA G30.3-M, Cold Drawn Steel Wire for Concrete Reinforcement.
6. Welded steel wire fabric: to CSA G30.5-M, Welded Steel Wire Fabric for Concrete Reinforcement. Provide in flat sheets only.

PART 3 - EXECUTION

3.1 FABRICATION

1. Fabricate reinforcing in accordance with CSA A23.1/A23.2, and Reinforcing Steel Manual of Standard Practice by the Reinforcing Steel Institute of Ontario.
2. Fabricate GFRP reinforcement in accordance with ASTM D7957, Standard Specification for Solid Round Glass Fiber Reinforced Polymer Bar for Concrete Reinforcement and CSA S806:12 (R2021), Design and Construction of Building Structures with Fibre-Reinforced Polymers.

3. Obtain Consultant's approval for locations of reinforcement splices other than shown on steel placing drawings.
4. Weld reinforcement in accordance with CSA W186.
5. Ship bundles of bar reinforcement clearly identified.
6. Store reinforcement on racks or skids to protect from dirt.

3.2 FIELD BENDING

1. Do not field bend 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.

3.3 PLACING REINFORCEMENT

1. Before placing, remove loose scale, dirt, oil or other coatings liable to impair bond.
2. Place reinforcing steel as indicated on reviewed shop drawings, in accordance with CSA A23.1/A23.2, and within specified tolerances. All reinforcing steel shall be fabricated such that the required thickness of concrete cover may be achieved.
3. Do not eliminate or displace reinforcement to accommodate hardware. Obtain Consultants approval of modifications prior to completing setting of steel. Provide extra reinforcement around wall and slab openings.
4. Secure reinforcement in position with chairs, spacers or hangers. The Contractor shall ensure that no reinforcing steel is in contact with formwork prior to and during the placement of concrete, and that the required concrete cover is achieved at all locations.
5. All reinforcing steel to be in place prior to pouring. Steel to be secured in place so as not be displaced by the pouring of the concrete.
6. Use plain round bars as slip dowels in concrete. Paint portion of dowel intended to move within hardened concrete with one coat of lead or asphalt paint. When paint is dry, apply a thick even film of mineral lubricating grease.
7. **Obtain Consultant's approval of reinforcing steel and position prior to placing concrete.**

3.4 SPLICING OF REINFORCEMENT

1. Only lap joints shall be allowed, unless otherwise noted.
2. Lengths of lap of reinforcing steel to be determined in accordance with Reinforcing Steel Manual of Standard Practice by the Reinforcing Steel Institute of Ontario.
3. No welding of reinforcement shall be allowed unless reinforcing steel bars conform to CSA G30.18, and welding is carried out in accordance to CSA W186.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. Coordinate all locations shown on drawings and for all items located herein.
 2. Provide all labour, materials, accessories and equipment to prepare for, mix, transport, handling, place, finish and cure cast-in-place concrete and grout necessary to construct structure required by the design, specified herein, and as required for the complete and proper provision of Work of this Section, including, but not limited to, the following:
 1. Concrete including cementing materials, fine and coarse aggregates, admixtures and water.
 2. Steel or polypropylene reinforcing fibers.
 3. Steel reinforcing bars and sheets.
 4. Granular underbed and air/vapour barrier / retarder.
 5. Curing and finishing.
 6. Metallic, non-metallic and dry-pack grout, together with grouting of column base and beam bearing plates.

1.2 REFERENCES & QUALIFICATIONS

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaw and the Ontario Ministry of Labour - all as currently amended.
2. See Standard Construction Document CCDC 2 for related items.
3. See Supplementary Conditions in conjunction with item 1.2.2 above.
4. **Related Sections:**
 1. Section 03100 - Concrete Formwork and Accessories
 2. Section 03200 – Concrete Reinforcement
 3. Section 03345 - Concrete Floor Finishes
5. **Certificates:**
 1. **Concrete Producers Qualifications:** Prior to submitting mix designs for review, submit certification that plant, equipment and materials to be used in concrete comply with requirements of CSA A23.1/A23.2.
 2. **Manufacturer's Qualifications:** Submit certificate from manufacturer certifying that the product proposed conforms to specified performance requirements.

6. Qualifications:

1. All concrete provided to be only from sources for which plant, equipment and materials comply with CSA A23.1/A23.2.
2. Undertake preparation for and application of specified penetrant sealant only by personnel with a minimum of five years documented experience in the successful application of water-based penetrant sealers.

7. Reference Standards:

1. The latest edition of the following Reference Standards, Codes, and Acts shall govern the Work of this Section. Where there are differences between the specifications and drawings and the codes, standards, or acts, the most stringent shall govern. Standards referenced within the Standards noted below are to apply even if they are not included in the list.
 1. National Building Code of Canada, 2010 (NBC).
 2. Ontario Building Code, 2012 (OBC).
 3. Canadian Standards Association (CSA).
 1. CSA A23.1-04, Concrete Materials and Methods of Concrete Construction.
 2. CSA A23.2-04, Test Methods and Standard Practices for Concrete.
 3. CSA A23.3-04, Code for the Design of Concrete Structures for Buildings.
 4. CSA A283-06, Qualification Code for Concrete Testing Laboratories.
 5. CAN/CSA-A3000-08, Cementitious Materials Compendium.
 6. CSA S413-07, Parking Structures.
 7. OPSD 904.

1.3 SUBMITTALS

1. Provide submittals in accordance with Section 01300 – Submittals.
2. Product Data: For all products specified herein, including product data, manufacturer's specifications, storage and handling requirements and recommendations, preparation and installation instructions, adjustment and alignment procedures and any special procedures.
3. Shop Drawings:
 1. Concrete Producer's Certification: Prior to submitting mix designs for review, submit certification that plant, equipment and materials to be used in concrete comply with requirements of CSA A23.1/A23.2.

2. Concrete Mix Designs:
 1. Submit designs for concrete mixes required by Contract Documents.
 2. When optimum bulk density of aggregates is specified, provide supporting evidence of compliance with requirements.
 3. Be aware that review of concrete mix design is for general conformity and that Contractor retains responsibility for compliance with Contract Documents.
3. Manufacturer's Certification: Submit certificate from manufacturer certifying that product proposed conforms to specified performance requirements.
4. Contractor's Quality Control: Submit proposed quality control procedures for hot or cold weather conditions, for ensuring correlation of concrete mix with strength or exposure classification for area of placement, and for finishing and curing methods.
5. Joint Location Drawings: Submit drawings showing proposed location of construction and control joints in slab-on-grade in accordance with typical details if joint layout is not detailed on the drawings.
6. Environmental Product Declarations (EPD): Submit a Type III (Independently Verified Third-Party) EPD for the reduced-carbon concrete for the required mix-designs.

1.4 **SPECIAL PROTECTION**

1. Provide adequate protection of materials and work of this Section from damage by on site storage, weather, construction activities and other causes.
2. Protect the work of other sections from damage resulting from work of this section and protect the work of this section from damage resulting from work of other sections. Make good such damage to the satisfaction of the Consultant.
3. Contractor to exercise protective treatment and other precautions required through the construction period, to ensure that items listed will be without damage or deterioration other than normal weathering and wear.
4. If items are damaged / soiled as noted above, items are to be replaced / repaired at contractor's expense, not extra cost to the contract.
5. Consult with section of work soiled before cleaning to ensure methods used will not damage their work.
6. All patching and repair due to damage by other trades, shall be performed under this section and paid for by the trade responsible for the damage.
7. Submit proposed quality control procedures for hot or cold weather conditions, for ensuring correlation of concrete mix with strength or exposure classification for area of placement, and for finishing and curing methods.

1.4 SEQUENCING & SCHEDULING

1. Ensure all work is installed and completed that will be concealed by this work.
2. The Contractor shall cooperate in the coordination and scheduling of the product to avoid delays in job progress.

1.5 PROJECT SITE CONDITIONS (ENVIRONMENTAL CONDITIONS)

1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by the manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
2. Comply with the Cold and Hot Weather Requirements of CSA A23.1/A23.2 and additionally as specified herein.
3. Provide protection or heat, or both, to ensure the temperature of concrete at surfaces is maintained at not less than 21°C for three days after placing, not less than 10°C for the next two days and above freezing for the next two days.
4. Provide protection or heat or both to prevent alternate freezing and thawing of concrete for fourteen days after placing.
5. Vent exhaust gases from combustion type heaters outside of protection enclosures.
6. Provide protection to maintain concrete continuously moist during curing period.
7. Provide same hot or cold weather protection for storage of field cured cylinders demonstrating strength development of in-situ concrete as for area of concrete construction which it represents until cylinders are sent to testing laboratory.
8. Do not commence placement of concrete when it is raining or rain is anticipated. Should rain commence during placing cover freshly placed concrete with waterproof material.
9. Place bonded toppings on rough slabs only when surface temperature is at least 15°C [60°F].
10. Do not grout at ambient air temperatures or concrete surface temperatures less than 5°C [40°F], or when air or surface temperature is expected to fall below 5°C [40°F] within 24 hours of grouting.
11. Do not apply sealants, or penetrant sealer, at ambient air temperatures or concrete surface temperatures less than 5°C [40°F], or when air or surface temperature is expected to fall below 5°C [40°F] within 12 hours of application.
12. Make suitable arrangements to prevent damage to fresh concrete by adverse weather conditions, such as rain, wind, or extreme temperatures.
13. Concrete shall not be poured against frozen ground, frozen concrete or into frosted formwork.

1.6 TESTING & INSPECTION

1. Inspection and Testing:
 1. As per SECTION 03050.

2. Be aware that Contractor retains sole responsibility for quality control of Work and that performance or non-performance of Independent Inspection and Testing Company does not limit, reduce, or relieve Contractor of responsibility for complying with the requirements of the Project Agreement.
3. Independent Inspection and Testing Company must be certified under CSA Standard A283, Qualification Code for Concrete Testing Laboratories, for Category 1 Certification.

PART 2 - PRODUCTS

2.1 MATERIALS

1. Cementitious Materials:
 1. Portland Cement: To CSA-A3000, Type 10 Cement unless noted otherwise.
 2. Cementitious Hydraulic Slag: To CSA- A3000.
 3. Flyash: To CSA-A3000.
2. Mixing Water:
 1. Potable water in compliance with CSA A23.1/A23.2.
3. Fine Aggregate:
 1. For slabs-on-grade, fineness modulus of fine aggregate to be between 2.7 and 3.1.
4. Coarse Aggregates:
 1. 20 mm (3/4") to 5 mm (No. 4 sieve) except as specified below.
 1. For Slabs-on-Grade:
 1. Abrasion loss not to exceed 35%.
 2. Maximum petrographic number of 125 when tested in accordance with ASTM C295, as conducted by Ministry of Transport of Ontario.
 2. For Slabs-on-Grade 125 mm [5"] and Thicker:
 1. 40 mm [1 1/2"] to 5 mm [No. 4 sieve]; combine at least two of the single sizes specified in Table 2 Group II of CSA A23.1/A23.2, one of which is to be 40 mm [1 1/2"], to obtain maximum bulk density (unit weight) and optimum grading, in accordance with an approved procedure.
 2. For slabs over steel deck (composite or non-composite) and bonded toppings 50 mm (2") thick and less:
 1. 12.7 mm (1/2") to 5 mm (No. 4 sieve).
 3. For columns less than 300 mm (12") in least dimension, or less than 95,000 mm² (150 in²) in cross sectional area, walls less than 200 mm (8") in width and concrete for grouting masonry:
 1. 10 mm (3/8") to 5 mm (No. 4 sieve).

5. Admixtures:

1. Conform to Reference Standards for chemical and air-entraining admixtures.
2. Provide only admixtures that are free of chlorides.
3. Provide evidence acceptable to the design engineer that superplasticizer does not increase shrinkage of concrete.

6. Polypropylene Fibres:

1. 100 percent virgin polypropylene, collated, fibrillated fibres; 50 mm [2"] nominal length.

7. Granular Underbed for Slabs-on-Grade:

1. As recommended by the Geotechnical Engineer.

8. Under slab Air/Vapour Barrier / Retarder:

1. As recommended by the Consultant.

9. Curing / Sealing Compound:

1. Water based acrylic emulsion membrane curing compound to ASTM C309, Type 1 generally.
2. Curing / sealing compounds to be compatible with any specified floor hardeners, covering adhesives and waterproofing compounds.

10. Grout:

1. Dry Pack Grout – under steel plates and where grout thickness does not exceed 75 mm (3").
 1. One part Portland cement to two parts concrete sand that conforms to CSA A23.1/A23.2 with only sufficient water that mix will retain its shape when made into ball by hand.

11. Premixed Grout:

1. Mix with water in accordance with manufacturer's printed instructions.
2. Must be non-shrink and may be metallic or non-metallic.

2.2 CONCRETE MIXES

1. Concrete:

1. All concrete shall be supplied as per the Exposure Classification in accordance with CSA A23.1 as noted on the drawings.
2. All concrete supplied under this contract shall be from an approved Ready Mixed Concrete Supplier.
3. Proportion normal density concrete in accordance with CSA A23.1/A23.2.

4. Unless otherwise indicated, the concrete mix designs are to be according to the following exposure classes specified by CSA A23.1:
 1. C-1 Exposure Class: For reinforced structural concrete (ie. structural walls and suspended floors).
 2. C-2 Exposure Class: For flat surface exterior concrete (ie: exterior slab-on-grade floors, frost slabs, curbs, sidewalks, etc.).
 3. F-2 Exposure Class: For exterior concrete (non-reinforced and reinforced) exposed to freeze-thaw cycles (ie: foundation walls, piers).
 4. N Exposure Class: For interior concrete (non-reinforced and reinforced) not exposed to freeze-thaw (ie. slab-on-grade floors, foundations, piers and footings).
 5. All concrete with Exposure Classes F-2, C-1, and N are to be reduced-carbon concrete with a reduction in CO₂ content of 30% minimum when compared to the current Ontario baseline concrete mix.
 6. Maximum water / cement ratio is dependent upon exposure class. Refer to CSA A23.1 for performance requirements.
 7. Air content is dependent upon exposure class. Refer to CSA A23.1 for performance requirements.
 8. Submit to Inspection and Testing Engineer if requested, acceptable evidence and material samples to verify that proposed concrete mix designs will produce specified concrete properties.
 9. Do not change concrete mix without prior approval of the Consultant.
2. Admixtures:
1. Chemical Admixture: Incorporate Water-reducing admixtures to ASTM C494 type 4 in all concrete.
 3. Air-entraining admixtures: Incorporate air-entraining agent in addition to chemical admixture in concrete of relevant Class of exposure, in accordance with CSA A23.1/A23.2, Clause 15, Table 19.
 4. Calcium Chloride: Do not use calcium chloride or other admixtures containing chloride.
 5. Use water-reducing admixture and air entraining admixture as per manufacturer's instructions.
 6. If other admixtures are used, obtain the Consultant's written approval before using.
3. Architectural Concrete
1. Obtain aggregate and cement for entire project from the same source at a single time.

PART 3 - EXECUTION

3.1 EXAMINATION

1. The Trade shall, together with any and all other Trades involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
2. Trades shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the Trade for correction prior to commencing the work of this section.
3. Commencement of the work of this section shall imply acceptance of all surfaces and conditions.
4. Proceed with installation only after unsatisfactory conditions have been corrected.
5. Verify that the opening sizes and tolerances are acceptable.
6. Confirm that subgrade of compacted fill conforms to requirements specified for backfilling before placing slab underbed.
7. Confirm that surfaces on which concrete is to be placed are clean and free of debris, frost and water before placing.
8. Confirm that concrete reinforcement, control joints, inserts and all other built-in Work is in place and secured, before commencing placement of concrete.
9. Confirm that placement of conduct or pipe within concrete section conforms to requirements of CSA A23.1/A23.2 prior to commencement of placement of concrete.

3.2 TOLERANCES

1. Place and finish concrete to provide tolerances in accordance with CSA A23.1/A23.2 and ACI 117, and additionally as specified herein.
2. Difference between elevation of high point and low point in specified area not to exceed:
 1. In any bay up to 100 m² [1100 ft²]: 12 mm [1/2"]
 2. In any bay up to 400 m² [4300 ft²]: 25 mm [1"]
3. F-Number System:
 1. Finish floor slabs to meet tolerance classification in accordance with CSA A23.1/A23.2, Clause 22.1.3 and Table 16 deemed appropriate for the use of the space.
 2. Measure FL levelness tolerance at 72 ± 12 hours after completion of floor finishing, on formed slabs before removal of shores and onslabs-on-grade

3.2 PREPARATION

1. General:
 1. **Obtain the Consultant's approval before placing concrete.** Provide 24h notice prior to placing of concrete.

2. Ensure that an adequate number of workmen are available for the placement of the concrete. Cold joints in concrete shall not be permitted unless expressly permitted by the Structural Engineer or indicated as such on the design drawings.
3. Site to be prepared for the movement of the ready-mix truck. Maximum delay of pour not to exceed one hour.
4. Confirm that subgrade of compacted fill conforms to requirements specified for backfilling before placing slab underbed.
5. Confirm that surfaces on which concrete is to be placed are clean and free of debris, frost and water before placing.
6. Confirm that concrete reinforcement, control joints, floor drains / trenches, conduit, sanitary, storm, piping, inserts and all other built-in Work is in place and secured, before commencing placement of concrete. Coordinate with all discipline drawing sets for complete scope of work.
7. 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 non-shrink grout to anchor dowels.
8. Install protection on adjacent surfaces (vertical or flat) from all concrete spatter during the pours.

3.3 PREPARATION FOR SLABS-ON-GRADE

1. Granular Underbed:
 1. Obtain Geotechnical Consultant's written confirmation that prepared subgrade is acceptable for placement of granular underbed.
 2. Place granular underbed over entire area of building and compact to 100% ASTM D698 (Standard Proctor) optimum dry density.
 3. Obtain Geotechnical Consultant's confirmation that thickness, elevation and compaction of granular underbed are acceptable.
2. Air/Vapour Barrier / Retarder:
 1. Install air/vapour barrier / retarder under slabs on grade where indicated on architectural drawings as per manufacturers installation instructions and products.
3. Remove foreign materials from underbed and forms before placing concrete.

3.4 MATERIALS

1. All concrete shall be batch weighed at either a stationary or portable batching plant.
2. All dispensing systems for admixtures shall incorporate visual, volumetric measuring and read-out units.
3. All concrete delivered between October 15th and April 30th shall be heated.
4. Cementitious Materials:
 1. Cementing material shall be delivered in totally enclosed container.

2. All cementing material shall be stored so as to protect it from the weather and from dampness.
3. All handling, weighing and batching equipment for cementing material shall be protected against wind and weather.
5. Mixing Water
 1. Water shall be clean and free from injurious amounts of oil, acid, alkali, organic matter or other deleterious substances.
 2. Water over 40°C shall not be brought into direct contact with the cement.
6. Admixtures
 1. All admixtures shall be used according to manufacturer's instructions.

3.5 HOT WEATHER CONCRETE

1. Comply with CSA A23.1/A23.2.
2. Conform to O.P.S.S. 904 subsection 904.07.03.07.

3.6 COLD WEATHER CONCRETE

1. Soil, formwork and air within enclosure must be at 15°C. (60 F) for a period of 12 hours before placement of concrete.
2. Concrete must be delivered to site at a minimum temperature of 15 C. (60F)
3. Protect freshly placed concrete from freezing. Cover and insulate as required. Provide temporary heat for a minimum of 48 hours after of the completion of the placing of concrete. The minimum temperature within the heated protection to be not less than 15 °C (60 F).
4. Conform to O.P.S.S. 904 subsection 904.07.03.08.

3.7 INSTALLATION

1. Concrete Placement
 1. Transport and place concrete in accordance with CSA A23.1/A23.2, and additionally as specified herein.
 2. Pumping of concrete and use of ready mix conveyor is permitted.
 3. Deposit concrete as close as possible to the final position.
 4. Ensure reinforcement and inserts are not disturbed during concrete placement. Work around reinforcement, embedded items.
 5. Vibrate concrete sufficiently to consolidate mass. Do not over-vibrate. Size of vibrator to match job. Work concrete into corners and eliminate air and stone pockets.
 6. Once started, placing must proceed as a continuous operation until the full section is complete.

7. Cold joints in concrete floors shall not be permitted unless expressly permitted by the Structural Engineer in writing or indicated as such on the design drawings.
8. Place concrete for entire floor framing system including beams, girders, slab drops, brackets, column capitals and haunches monolithically unless otherwise noted on Drawings.
9. Transport and spread concrete over steel framing in a manner to prevent lateral deflection and twisting of members.
10. Place and finish concrete to provide tolerances in accordance with CSA A23.1/A23.2 and ACI 117 and specified herein. Moisture loss to be kept to a minimum.
11. Do not place load upon new concrete until authorized by Consultant.

3.8 CONCRETE FINISHING

1. Floor, Roof, Stair Treads, and other Slab Surfaces:

1. Immediately after placing, protect concrete from premature drying, sunshine exposure, excessively hot or cold temperatures and mechanical injury.
2. Maintain at a relatively constant temperature to obtain proper hydration of cement in the concrete.
3. Perform finishing operations on plastic concrete surfaces in accordance with CSA A23.1/A23.2, Clause 22, and as specified herein.
4. Be aware that concrete for this Project may contain slag or fly ash cement which results in delay of concrete set and onset of bleeding.
5. Screed surface to an even, level, or sloped surface, to elevations indicated on Drawings or required for specified finishes or concrete toppings.
6. Float surfaces by means of power or hand float when concrete has hardened sufficiently for worker to leave only slight footprint on surface, taking care to avoid bringing bleed water and fines to surface by overfloating.
7. Do not commence finishing of slab surfaces while bleed water is on surface or add water or cement to surface.
8. Finish slab surfaces to match sample finishes approved by the Design Team.
9. Unless otherwise required by the design, finish slab surfaces to provide a hard, smooth, dense steel trowelled surface, free of ridges or depressions, trowel marks or blemishes, and of uniform appearance.
10. Non-Slip Floor Surfaces: Provide swirled finish of texture acceptable to Consultant by spin troweling final steel troweling or broom finish.
11. Maintain accurate records of poured concrete items to indicate date, location of pour, quality, air temperature and test samples taken.
12. All exposed concrete slabs are to be homogeneous and monolithic in appearance and free of any cold-joints, patches, abrasions, scratches, or other deficiencies. No grinding of slabs is permitted unless epoxy seamless flooring / painted floor finish is applied.

13. The consultant to be notified by writing requesting any grinding of floor slabs to achieve proper grades. All grinding of floor slabs must not proceed until approved by the consultant.
14. No patching of floor slabs is permitted unless approved by the Consultant.

2. Control Joints in Slabs-on-Grade

1. Sawcut control joints are to be according to drawings with a maximum sawcut control joint spacing of 4.5m unless otherwise specified / noted.
2. Commence saw cutting before slab temperature starts to fall and as soon as concrete may be cut without dislodging aggregate but within 18 hours of placement.
3. Sawcut unreinforced slabs to a depth of 0.25 slab thickness, fibre reinforced slabs to 0.33 slab thickness. Unless otherwise specified. Coordinate with slab on grade saw cut details.
4. Grind edges of sawcuts to remove burrs but do not bevel or chamfer joint edges.
5. Keep construction traffic which may erode concrete at edges of sawcuts off floor until joints have been filled and joint filler has cured.

3. Formed Surfaces

1. Treat formed surfaces in accordance with CSA A23.1/A23.2, Clauses 24.1 and 24.2, and as additionally specified herein:
 1. Finish vertical surfaces to receive waterproofing membrane smooth with no ridges or depressions.
 2. Finish surfaces to receive a hot-applied rubberized asphalt membrane smooth with no ridges or depressions, using "Sack-Rubbed Finish" in accordance with CSA A23.1/A23.2, Clause 24.3.4.4 including cleaning surfaces of dust, oil, grease, chemical films, or other coatings or contaminants, and loose or spalled material, repairing any honeycombed areas and removing any projecting mortar or concrete fins.
 3. Finish surfaces to receive crystalline waterproofing smooth with no ridges or depressions, using "Sack-Rubbed Finish" in accordance with CSA A23.1/A23.2, Clause 24.3.4.4 including cleaning surfaces of dust, oil, grease, chemical fills, or other coatings or containments, and loose or spalled material, repairing any honeycombed areas and removing any projecting mortar or concrete fins.
 4. Repair, re-rub, regrind or otherwise correct concrete surfaces to approval of Consultant and trade applying waterproofing or adhering finish to surface.
 5. Plugs at Recessed Ties:
 1. Clean tie holes to remove all foreign matter.
 2. Coat plugs by dipping in adhesive and insert in hole.
 3. Remove excess adhesive immediately with thinner recommended by manufacturer to ensure that concrete surface is not stained or blemished in any way.

6. Elastomeric Membrane

1. Where fluid elastomeric waterproofing membrane turns up vertical surfaces, provide light sandblast finish.

4. Curb Edging

1. Finish external corners of curbs rounded, smooth and straight without undulations.

5. Stair Tread Non-Slip Inserts:

1. Install treads as per detailed on architectural drawings.

6. Finishing Architectural Concrete

1. Perform finishing of Architectural Concrete surfaces only by competent personnel with demonstrated experience in finishing of Architectural Concrete surfaces.
2. Ensure that tools and handling equipment are completely clear of rust, chemicals, contaminants, hardened concrete and other foreign material which would cause dis-colouring or blemishes.
3. Finish plastic Architectural Concrete surfaces in accordance with Article 1.4.2.
4. When required by the design, sandblast Architectural Concrete surfaces specified to medium texture evenly over each surface and consistently throughout Project to match approved mock-up.
 1. Protect other surfaces and equipment against damage resulting from sandblasting operations.
 2. Use material that will minimize environmental contamination.
5. When required by the design, bush-hammer Architectural Concrete surfaces specified to medium texture evenly over each surface and consistently throughout Project to match approved mock-up. Take care to avoid breaking external corners of bush-hammered concrete.
 1. Remove debris from finishing operations.

3.9 BONDED CONCRETE TOPPINGS

1. Conform to CSA A23.1/A23.2, Clause 23, and as additionally specified herein.
2. Be aware that thickness of topping required by the design is the nominal value and that actual thickness will vary depending on cambers or deflections of supporting framing.
3. Place each section of bonded topping in one continuous operation taking special precautions against plastic shrinkage cracking, whenever rapid drying of the topping may occur, in accordance with CSA A23.1/A23.2, Clause 21.
4. Control Joints in Topping:
 1. Provide control joints for topping directly over construction joints in base slab.

2. Provide control joints in toppings over precast slabs, on centre lines of supporting members, and at 5 m [16'-0"] maximum spacing parallel to span of slabs.
3. In all other respects comply with sawcut control joint requirements for slabs-on-grade.

3.10 **CURING AND SEALING**

1. Cure concrete in accordance with CSA A23.1/A23.2, Clause 21 and as specified herein.
2. Be aware that proper curing is essential for durable concrete, and that failure to cure properly may result in accelerated deterioration including shrinkage, scaling, dusting and spalling.
3. Curing Compound Method:
 1. Use curing and sealing compound specified in Clause 2.1.10 except:
 1. On surfaces specified to receive epoxy or similar paint finish.
 2. On surfaces specified to receive architectural finishes which require adhesives which are incompatible with the curing compound.
 2. Use specified water-based compound except that when temperature is below 5°C (40°F) use solvent-based compound acceptable to Consultant.
 3. Apply curing and sealing compound in strict accordance with manufacturer's instructions, ensuring complete and adequate coverage of surface.
4. Plastic Film Method:
 1. Where curing compound method cannot be used, and surfaces are not exposed to freezing and thawing or deicing chemicals, cure finished slab surfaces as follows:
 1. Cover with 0.102 mm [4 mil] thick polyethylene sheets, lap edges 100 mm [4"] minimum and seal laps.
 2. Leave in place for the "Basic Curing Period" in accordance with CSA A23.1/A23.2, Clause 21.1.2, but in no case for less than 3 days generally, except not less than 7 days for exposed warehouse and industrial floor surfaces.
5. Surface Treatments
 1. Treat formed surfaces in accordance with CSA A23.1/A23.2, Clauses 24.1 and 24.2, and as additionally specified herein.
 2. Rub exposed sharp edges of concrete with carborundum to produce 3 mm radiuses edges unless otherwise detailed.
 3. Finish vertical surfaces to receive waterproofing membrane smooth with no ridges or depressions.

4. Finish surfaces to receive a hot-applied rubberized asphalt membrane smooth with no ridges or depressions, using "Sack-Rubbed Finish" in accordance with CSA A23.1/A23.2, Clause 24.3.4.4 including cleaning surfaces of dust, oil, grease, chemical films, or other coatings or contaminants, and loose or spalled material, repairing any honeycombed areas and removing any projecting mortar or concrete fins.
5. Finish surfaces to receive crystalline waterproofing smooth with no ridges or depressions, using "Sack-Rubbed Finish" in accordance with CSA A23.1/A23.2, Clause 24.3.4.4 including cleaning surfaces of dust, oil, grease, chemical fills, or other coatings or containments, and loose or spalled material, repairing any honeycombed areas and removing any projecting mortar or concrete fins.
6. Repair, re-rub, regrind or otherwise correct concrete surfaces to approval of Consultant and trade applying waterproofing or adhering finish to surface.
7. Plugs at Recessed Ties:
 1. Clean tie holes to remove all foreign matter.
 2. Coat plugs by dipping in adhesive and insert in hole.
 3. Remove excess adhesive immediately with thinner recommended by manufacturer to ensure that concrete surface is not stained or blemished in any way.

3.11 PROTECTION

1. Protect floor slabs and other concrete surfaces on which toppings or finishes are to be applied, from grease, oil, dirt and other materials or compounds which would impair bond of toppings or finish materials.

3.12 CLEAN UP

1. Clean in conformance with Division 1 General Requirements.
2. Clean exposed surfaces using methods acceptable to the manufacturer which will not damage finish.
3. Repair finishes damaged during installation, restore finishes so no evidence remains of corrective work.
4. Remove excess materials, maskings and debris and clean adjacent surfaces immediately after application.
5. Remove excess materials including waste hardened concrete, mock-up panels, sample areas, and other debris resulting from Work of this Section from site and leave premises in a condition acceptable to the Consultant.
6. Remove any concrete droppings, washout materials from the site. Do not use in backfill.

3.13 DEFECTIVE WORK

1. Failure of materials or workmanship to meet requirements of the Project Agreement including failure to meet specified 28-day concrete strength, variations in hardened surface in excess of specified tolerances, marked, disfigured or honeycombed surfaces which do not meet surface finish requirements and cannot be repaired by approved methods, and failure of products to meet specified performance requirements, will be considered defective Work performed by this Section.

2. Repair or replace defective Work as directed by the Consultant.
3. Pay for additional inspection and testing, redesign, corrective measures, and related expenses required to correct defective Work of this Section.

END OF SECTION

PART 1 – GENERAL

1.1 **SUMMARY**

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. Provide labour, materials and equipment for the placement of the concrete floors as shown on the drawings, as necessary to complete the work or as described herein.
 2. Installation of all joint filler (isolation joints), sawcut control joints, sawcut control joint filler, vapour barrier and retarders, sealing compounds, curing compounds and caulking.
 3. All concrete flooring locations and all concrete flooring locations with concrete sealed (C(S)). Coordinate with architectural drawings for flooring finish.

1.2 **REFERENCES & QUALIFICATIONS**

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaw and the Ontario Ministry of Labour - all as currently amended.
2. See Standard Construction Document CCDC 2 for related items.
3. See Supplementary Conditions in conjunction with item 1.2.2 above.
4. **References: (All as currently amended)**
 1. Do concrete floor finishing work in accordance with CSA A23.1/A23.2, Concrete Materials and Methods of Concrete Construction/Methods of Test for Concrete, except where specified otherwise.
 2. **Canadian General Standards Board (CGSB):**
 1. CAN/CGSB-25.20, Surface Sealer for Floors.
 3. The omission of notation on the contract drawings does not relieve the Contractor of the requirements of this specification.
 4. Notwithstanding the noted references, the most current accepted standard shall apply. The Contractor shall notify the Consultant immediately in the event of a discrepancy or error in standards notation.

1.3 **SUBMITTALS**

1. Provide submittals in accordance with Section 01300 – Submittals.
2. **Product Data:**
 1. For all products specified herein, including product data, manufacturer's specifications, storage and handling requirements and recommendations, preparation and installation instructions, adjustment and alignment procedures and any special procedures.
 2. Submit written declaration that components used are compatible and will not adversely affect finished flooring products and their installation adhesives.

1.4 **MAINTENANCE DATA & MATERIALS**

1. Data: Provide maintenance data in Operation and Maintenance Manual.
2. Materials: N/A

1.5 **ALLOWANCES**

1. N/A

1.6 **DELIVERY & STORAGE**

1. Arrange for early deliveries necessary for execution of work without delay and have materials on job well in advance of the time it is needed to avoid construction delays.
2. Deliver, store and handle materials to exclude foreign material and prevent damage, soiling or breakage.
3. Delivery to the job site shall be coordinated by the General Contractor.
4. Materials stored on site which need to be protected from weather shall be so protected.
5. Store in manufacturers unopened packing labelled with description of contents along with numbering or nomenclature used on shop drawings and bearing brand and manufacturer's name in a secure, dry and warm, protected with adequate ventilation, free from dust and water location in accordance with manufacturer's printed directions / instructions until installation can proceed. Inspect product upon receipt and report damaged material immediately to delivering carrier and note such damage on the carrier's freight bill of lading.
6. Keep products from freezing.
7. Store flammable materials in safe, approved containers to eliminate fire hazards. Remove from Site at end of each work shift.
8. Do not use materials that have been stored for period exceeding maximum recommended shelf life of materials.
9. Storage of any material on or off the site is the responsibility of the contractor.

1.7 **SPECIAL PROTECTION**

1. Provide adequate protection of materials and work of this Section from damage by on site storage, weather, construction activities and other causes.
2. Protect the work of other sections from damage resulting from work of this section and protect the work of this section from damage resulting from work of other sections. Make good such damage to the satisfaction of the Consultant.
3. Contractor to exercise protective treatment and other precautions required through the construction period, to ensure that items listed will be without damage or deterioration other than normal weathering and wear.
4. If items are damaged / soiled as noted above, items are to be replaced / repaired at contractor's expense, not extra cost to the contract.
5. Consult with section of work soiled before cleaning to ensure methods used will not damage their work.

6. All patching and repair due to damage by other trades, shall be performed under this section and paid for by the trade responsible for the damage.

1.8 **WARRANTY**

1. The work and materials of this section shall be warranted in accordance with GC 12.3 of CCDC Document 2 and SC 3.44 of City of Brantford's Supplementary Conditions, most current issuance.

1.9 **SEQUENCING & SCHEDULING**

1. Ensure all work is installed and completed that will be concealed by this work.
2. The Contractor shall cooperate in the coordination and scheduling of the product to avoid delays in job progress.

1.10 **PROJECT SITE CONDITIONS (ENVIRONMENTAL CONDITIONS)**

1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.11 **TESTING & INSPECTION**

1. Inspection and testing agency to test compression strength.
2. The Contractor shall be solely responsible to ensure that any flooring materials that are sensitive to moisture are installed under the **strict** warranty requirements and installation requirements of the material manufacturer. Any moisture testing prior to installation shall be completed and recorded, and documentation supplied to the Consultant and material manufacturer prior to installing floor finishes.

PART 2 - PRODUCTS

2.1 **VAPOUR BARRIER AND RETARDER**

1. Polyethylene film: 15 mils, to CAN/CGSB 51.34-M86, Vapour Barrier / Retarder, Polyethylene Sheet for use in Building Construction.
2. Coordinate with architectural drawings and specifications for product and additional information.

2.2 **JOINT FILLER (ISOLATION JOINTS)**

1. Premoulded Joint Filler: 12.7mm (1/2") thickness, bituminous impregnated fiberboard to ASTM D1751.
2. Acceptable Products:
 1. W.R.Meadows Sealtight Fiber Expansion Joint Filler.
 2. W.R Meadows Sealtight X-Foam.
 3. Or approved alternative.

2.3 **SAWCUT CONTROL JOINT FILLER**

1. Sawcut Joint Filler: W.R.Meadows Sealtight Rezi-Weld Flex semi-rigid epoxy joint filler, or approved alternative.

2.4 **CURING COMPOUNDS**

-
1. Select low VOC, curing compounds.

2. Curing compound: Clear liquid, to ASTM C-309; acceptable products:
 1. W.R.Meadows Sealtight CS-309
 2. Or approved alternative.

2.5 **SEALING COMPOUNDS**

1. Surface sealer: To CAN/CGSB-25.20, Type 1 - solvent-based, clear.
 1. Interior:
W.R.Meadows Sealtight VOCOMP-25
Or approved alternative
2. Sealants: Maximum VOC limit 250 g/L.
3. Surface sealers are not manufactured or formulated with hexavalent chromium and their compounds.
4. Select compatible material for curing compounds specified in this Section and chemical hardeners when chemical hardener is applied at a later date in schedule.
5. Seal surfaces not receiving chemical hardener if concrete floor is not labelled with a specific finish.

2.6 **SURFACE REMEDIATION**

1. Topping: Mapei Topcem Premix (6mm to 50mm, up to 100mm with additional granular) / Mapei Mapcem Premix (6mm to 100mm thick), or approved alternative - surface to be of floor finish procedure requirements below.

2.7 **CAULKING**

1. Caulking: To CAN/CGSB-19.24-M90, Multi-component, Chemical Curing Sealing Compound, for vertical and horizontal non-traffic bearing joints, normal temperature range, wet conditions, movement range to 25 %, self-levelling.

PART 3 - EXECUTION

3.1 **EXAMINATION**

1. The Trade shall, together with any and all other Trades involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
2. Trades shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the Trade for correction prior to commencing the work of this section.
3. Commencement of the work of this section shall imply acceptance of all surfaces and conditions.
4. Proceed with installation only after unsatisfactory conditions have been corrected.
5. Verify that the opening sizes and tolerances are acceptable.

3.2 **PREPARATION**

1. Clean surfaces thoroughly prior to installation.
2. Ensure all granular fill is compacted as required.

3.3 INSTALLATION

1. Install all products in accordance with manufacturer's installation instructions and recommendations along with approved submittals.
2. Coordinate with mechanical and electrical for any final connections.
3. Dissimilar metals in contact or metals and masonry or concrete, when necessary to prevent corrosion, to be insulated one from another by methods and materials required for such results, as approved by the Consultant.

3.4 UNDER SLAB VAPOUR BARRIER AND RETARDER

1. Install vapour barrier / retarder membrane under all concrete slabs-on-grade over compacted granular fill.
2. Return vapour barrier / retarder up at all slabs-on-grade edges. Cut flush with slab top surface and install continuous caulk and backer rod (backer rod where void allows) at all perimeters.
3. Lap membrane joints 300mm (12") at locations minimum and continuous seal with manufacturers tape.
4. Ensure all penetrations are sealed with tape and mastic.
5. Seal punctures in membrane before placing concrete. Use patching material at least 150mm (6") larger than puncture and seal around perimeters.
6. Install all reinforcing as required with chairs. Ensure reinforcing is cut and prepared as per slab on grade control joint details so cracking is occurring at these locations only.

3.5 JOINT FILLERS (ISOLATION JOINTS) & BOND BREAKS

1. Furnish filler as required for each joint in single piece for depth and width required for joint, unless otherwise authorized by the Consultant. When more than one piece is required for a joint, fasten abutting ends and hold securely to shape by a positive fastening method.
2. Use 12.7mm (1/2") thick joint filler and extend joint filler from bottom of slab to within 12.7mm (1/2") of finished slab surface. Cap top of joint filler with removable 12.7mm x 12.7mm (1/2" x 1/2") wood strip.
3. Use under slab vapour barrier and retarder turned up at slab edges for bond break between all vertical surfaces (slab perimeter edge conditions). Coordinate with slab on grade to vertical surface details.
4. Remove 12.7mm x 12.7mm (1/2" x 1/2") wood strip from concrete.
5. Fill top of joint filler to level with top of concrete floor surface with caulking. Ensure caulking is compatible with finished floor system to be installed, coordinate with material manufacturer for acceptance.

3.6 SAWCUT CONTROL JOINTS

1. Install and cut all slab on grade control joints / sawcut control joints as noted and shown on the drawings.

3.7 **SAWCUT JOINT FILLER**

1. Use compressed air to blow out all debris / clean out all sawcuts.
2. Fill all concrete slab on grade control joint sawcuts flush with adjacent finished concrete floor surface with specified product.
3. Install and provide masking of adjacent floor surfaces as per manufacturers installation instructions.

3.8 **FLOOR FINISH PROCEDURE**

1. Finish concrete floor with machine trowelled finish to floor flatness of F-40 or better and receive finished flooring and in accordance with CSA A23.1/A23.2, (Class 'A') unless 'broom' finish is noted.
2. Do not sprinkle dry cement or dry cement and sand mixture over concrete surfaces as an aid to finishing.
3. Cure concrete in accordance with Section 03300 Cast-in-Place Concrete.
4. Sawcut concrete slabs-on-Grade in accordance with Section 03300 Cast-in-Place Concrete.
5. If floor is to receive resilient or carpet flooring, ensure specified control joint material is acceptable to the flooring manufacturer, if not the flooring manufacturer is to recommend a product to be reviewed and approved by the Consultant and structural engineer.
6. For polished concrete floor finish refer to Section 03350 Polished Concrete Floor for additional specifications and details.
7. Install all curing, sealants, hardeners, etc. in accordance with manufacturer's installation instructions and recommendations along with approved submittals.
8. After floor treatment is dry, seal control joints and joints at junction with vertical surfaces with sealant.

3.9 **PROTECTION**

1. Protect all floor surfaces from any construction work, throughout the duration of the construction project.
2. Protect finished installation in accordance with manufacturer's instructions.

3.10 **CLEAN-UP**

1. Clean in conformance with Division 1 General Requirements.
2. Clean exposed surfaces using methods acceptable to the manufacturer which will not damage finish.
3. Repair finishes damaged during installation, restore finishes so no evidence remains of corrective work. Repairs are to be done as directed by the manufacturer.
4. Floor surfaces to be cleaned at end of each work day.

3.11 ADJUSTMENT / ACCEPTANCE / SURFACE REMEDIATION

1. No remediation work is to be undertaken on any installed poured in place concrete floor slabs. This includes grinding, patching, concrete topping, improper sloping, void filling, raised swirling, machine markings, tire skid marks, dents, gouges, depressions, markings, etc. The floor system is to be a uniform, homogeneous, consistent floor finish (level or sloping) worked with the float device (even float devices finished floor is under review as they are not always consistent and uniform) or the floor is unacceptable and will require remediation additional work as directed by the Consultant at no additional cost to the contract. All additional work and costs will be covered by the general contractor and their subtrades.
2. Where the installation of the floor system is not installed level to the required level datum or sloping for sloping to floor drains and there are inconsistencies in the surface level as noted above, the Contractor is to install a concrete topping to bring up the installed floor finish to the required level or grind down to achieve the required level or slope. The Contractor is to provide the Consultant with grade shots to determine the depth / thickness of the concrete topping for a suitable product for the application or amount of grinding required to achieve sloping floors. The Consultant will provide the floor surface finish product to be used (epoxy seamless flooring by Stonhard with colour and texture / grit included integral cove base) for all finished floor coverings and base on remediated floors where no solid material finished floor coverings are noted.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. Coordinate all locations shown on drawings and for all items located herein.
 2. Masonry mortar for all masonry wall systems.

1.2 REFERENCES & QUALIFICATIONS

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaw and the Ontario Ministry of Labour - all as currently amended.
2. References: (All as currently amended)
 1. Masonry mortar and grout work to be in accordance with CSA A179-14 "Mortar and Grout for Unit Masonry" latest edition except where specified otherwise.
 2. Mortar compressive strength complying with ASTM C270.
 3. CSA A371.

1.3 SUBMITTALS

1. Provide submittals in accordance with Section 01300 – Submittals.
2. Product Data:
 1. For all products specified herein, including product data, manufacturer's specifications, storage and handling requirements and recommendations, preparation and installation instructions.
2. Samples:
 1. Masonry mortar 'pucks' in clear plastic puck containers for review.
3. Mock Ups: N/A

1.4 MAINTENANCE DATA & MATERIALS

1. Data: Provide maintenance data in Operation and Maintenance Manual. Contractor to include mortar "recipe" for custom blend in documentation.
2. Materials: N/A

1.5 ALLOWANCES

1. Additional Masonry Mortar: Include in base tender sum labour and material for an additional 2 m² of masonry installed for items not indicated on drawings or found field conditions on site.

1.6 DELIVERY & STORAGE

1. Arrange for early deliveries necessary for execution of work without delay and have materials on job well in advance of the time it is needed to avoid construction delays.
2. Deliver, store and handle materials to exclude foreign material and prevent damage, soiling or breakage.
3. Delivery to the job site shall be coordinated by the General Contractor.
4. Materials stored on site which need to be protected from weather shall be so protected.
5. Store in a secure and dry location until installation can proceed.
6. All items to be packaged and labelled with description of contents along with numbering or nomenclature used on shop drawings.
7. Storage of any material on or off the site is the responsibility of the contractor.

1.7 SPECIAL PROTECTION

1. Provide adequate protection of materials and work of this Section from damage by on site storage, weather, construction activities and other causes.
2. Protect the work of other sections from damage resulting from work of this section and protect the work of this section from damage resulting from work of other sections. Make good such damage to the satisfaction of the Consultant.
3. Contractor to exercise protective treatment and other precautions required through the construction period, to ensure that items listed will be without damage or deterioration other than normal weathering and wear.
4. If items are damaged / soiled as noted above, items are to be replaced / repaired at contractor's expense, not extra cost to the contract.
5. Consult with section of work soiled before cleaning to ensure methods used will not damage their work.
6. All patching and repair due to damage by other trades, shall be performed under this section and paid for by the trade responsible for the damage.

1.8 WARRANTY

1. The work and materials of this section shall be warrantied in accordance with GC 12.3 of CCDC Document 2 and SC 3.44 of the City of Brantford's Supplementary Conditions, most current issuance.

1.9 SEQUENCING & SCHEDULING

1. Ensure all work is installed and completed that will be concealed by this work.
2. The Contractor shall cooperate in the coordination and scheduling of the product to avoid delays in job progress.

1.10 **PROJECT SITE CONDITIONS (ENVIRONMENTAL CONDITIONS)**

1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.11 **TESTING & INSPECTION**

1. Testing of mortar materials will be carried out by testing laboratory designated by the Consultant.
2. Submit samples of sand and water for testing to ensure that mortar will not produce efflorescence.
3. Mortar shall be tested in accordance with the requirements of clause 4.4.1 in CSA S304-14, "Design of Masonry Structures" and CSA A179-14, "Mortar and Grout for Unit Masonry".
4. Testing shall be completed for each 250m² of masonry, for each storey where applicable.

PART 2 - PRODUCTS

2.1 **MATERIALS**

1. Portland Cement (Cast Stone): Conforming to CAN/CSA-A3002-03, "Cementitious Materials Compendium" and ASTM C150 white & grey blend (approx. ratio of 1 white : 3 grey).
Note - Contractor to confirm original mortar and appropriate matching blend with Schutt's Brick, Stone & Landscape in Brantford.

1. Sand: Conform to requirements of CAN/CSA-A179-14, "Mortar and Grout for Unit Masonry", ASTM C144 and ASTM C111.

NOTE: Coordinate with mortar supplier sand type to be used to achieve specified colour match to existing stone.

2. Water: Potable, free from injurious or other substances detrimental to mortar and that will cause efflorescence.
3. Hydrated Lime: Conforming to ASTM C207-79 "Specifications for Hydrated Lime for Masonry Purpose" Type S. Hydrated lime shall be "soaked" 48 hours before paste is mixed with sand.
4. Mortar Types:
 1. Cast stone masonry veneer: 1:1:6 (1 Part Portland Cement, 1 Part Lime, 6 Part Sand) Type "N" mortar.
5. Parging:
 1. Parging Mortar: Type 'M' to latest CSA A179-14, "Mortar and Grout for Unit Masonry".

Notes: All admixtures are not to be used to meet cold weather requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

1. The Contractor shall, together with any and all other sub-contractors involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
2. Contractor shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the sub-contractors for correction prior to commencing the work of this section.
3. Commencement of the work of this section shall imply acceptance of all surfaces and conditions.
4. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

1. Clean surfaces thoroughly prior to installation.
2. Ensure all through wall flashings are installed before proceeding with this work.

3.3 MIXING:

1. Mix all premixed mortars in strict conformance with directions provided by the manufacturer.

3.4 INSTALLATION

1. Install in accordance with manufacturer's installation instructions and recommendations.

3.5 CLEAN-UP

1. Clean in conformance with Division 1 General Requirements.
2. Remove excess materials and debris and clean adjacent surfaces immediately after application, mortar splashing, spotting and runs on finished surfaces will not be accepted.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. Provide cast stone masonry as indicated in the specifications and on the drawings.

1.2 REFERENCES & QUALIFICATIONS

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaw and the Ontario Ministry of Labour - all as currently amended.
2. **Qualifications:**
 1. Manufacturer having sufficient plant facilities to produce the shapes, quantities and size of products required in accordance with the project schedule.
 2. Company or person specializing in commercial masonry work with five (5) years documented experience.
3. **References: (All as currently amended)**
 1. ASTM C97: Standard Test Methods for Absorption and Bulk Specific Gravity of Dimension Stone.
 2. ASTM C73: Standard Specification for Calcium Silicate Face Brick.
 3. ASTM C99, Standard Test Method for Modulus of Rupture of Dimension Stone.
 4. ASTM C170, Standard Test Method for Compressive Strength of Dimension Stone.
 5. CSA A371: Masonry Construction for Buildings.

1.3 DEFINITIONS

1. Cast stone masonry units – manufactured from zero slump concrete.
 1. Vibrant Dry Tamp (VDT) casting method: Vibratory ramming of earth moist, zero-slump concrete against a rigid mold until it is densely compacted.

1.4 SUBMITTALS

1. Provide submittals in accordance with Section 01300 – Submittals.
2. **Shop Drawings:** including profiles, cross-sections, reinforcement, exposed faces, arrangement of joints, anchoring methods, anchors, annotation of stone types and their location.
3. **Samples:** duplicate 4" x 4" size samples, illustrating available finishes and colors for selection by the Consultant.
4. **Mock-up:** supply sufficient quantity of full size units for use in constructing mock-up panel.

1.5 MAINTENANCE DATA & MATERIALS

1. Data: provide maintenance data in Operation and Maintenance Manual.

1.6 DELIVERY & STORAGE

1. Delivery to the job site shall be coordinated by the General Contractor.
2. All items to be packaged and labelled with description of contents along with numbering or nomenclature used on shop drawings and bearing brand and manufacturer's name. Each item is to be individually wrapped in protective crating or packaging complete with all fittings and accessories as required.
3. Handle materials carefully to prevent damage.
4. Deliver Arris-cast units in protective film. Prevent damage to units.
5. Lift skids with proper and sufficiently long slings or forks with protection to prevent damage to units. Protect edges and corners.
6. Store units in a manner designed to prevent damage and staining of units.
7. Stack units on timbers or platforms at least 75 mm above grade.
8. Place polyethylene or other plastic film between wood and other finished surfaces of units when stored for extended periods of time.
9. Cover stored units with protective enclosure if exposed to weather.
10. Do not use salt or calcium-chloride to remove ice from masonry surfaces.

1.7 SPECIAL PROTECTION

1. Provide adequate protection of materials and work of this Section from damage by on site storage, weather, construction activities and other causes.
2. Protect the work of other sections from damage resulting from work of this section and protect the work of this section from damage resulting from work of other sections. Make good such damage to the satisfaction of the Consultant.
3. Contractor to exercise protective treatment and other precautions required through the construction period, to ensure that items listed will be without damage or deterioration other than normal weathering and wear.
4. If items are damaged as noted above, items are to be replaced / repaired at contractor's expense, not extra cost to the contract.
5. Use protection materials and methods which will not stain or damage units.
6. Remove protection materials upon Substantial Performance of the Work, or when risk of damage is no longer present.

1.8 **WARRANTY**

1. The work and materials of this section shall be warrantied in accordance with GC 12.3 of CCDC Document 2 and SC 3.44 of the City of Brantford's Supplementary Conditions, most current issuance.

1.9 **SEQUENCING & SCHEDULING**

1. Ensure all work is installed and completed that will be concealed by this work.

1.10 **PROJECT SITE CONDITIONS (ENVIRONMENTAL CONDITIONS)**

1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside the manufacturer's absolute limits.
2. Conform to Hot and Cold Weather Construction requirements of CSA A371.

PART 2 - PRODUCTS

2.1 **MANUFACTURERS**

1. The basis of this specification is based on Arriscraft International as distributed by Arriscraft, Cambridge, Ontario Tel: 800.265.8123.

2.2 **MATERIALS**

1. Portland Cement: to ASTM C150, Type I or Type III, white & grey blend (approx. ratio of 1 white : 3 grey).
Note - Contractor to confirm original mortar and appropriate matching blend with Schutt's Brick, Stone & Landscape in Brantford, or approved alternative.
2. Coarse Aggregate: Limestone, to ASTM C33, except for gradation.
3. Fine Aggregate: manufactured or natural sands, to ASTM C33, except for gradation.
4. Pigments: inorganic iron oxide pigments, to ASTM C979. Do not use carbon black pigment.
5. Retarding, Accelerating and High-Range Admixtures: to ASTM C494/C495M, Types A - G.
6. Water Repellents and Other Chemical Admixtures: previously established as suitable for use in concrete by proven field performance or through laboratory testing.
7. Dark Mineral Admixtures: to ASTM C618.
8. Water: potable.

2.3 **COMPONENTS**

1. Field Stone:
 1. Arriscraft custom blend (to match existing stone on adjacent Pro Shop), or approved alternative.
Note - Contractor to confirm original stone selection and appropriate matching blend with Schutt's Brick, Stone & Landscape in Brantford, or approved alternative.

2. Profile Unit: Sloped Sill / Watertable Stone (With Drip Cut)
 2. Sloped Sill / Watertable Stone 57mm high, 140mm deep, 390mm long. Both ends finished and as indicated on Drawings.
3. Texture & Colour: Profile units texture sandblasted on exposed faces. Colour to match Fort Valley Limestone.
4. Mortar: Portland cement-hydrated lime-sand mix, Type N to ASTM C270, as specified in Section 04100.
5. Grout: maximum 6,500 psi at 28 days.
6. Joint Sealants and Backer Rods: non-staining type, as specified in Section 07900.
7. Through Wall Flashing (TWF) Membrane: Blueskin SA TWF by Bakor (Air Bloc 21 and Blueskin Primer or Aquatac Primer as per manufacturers installation instructions). Install over openings, below windows and openings, over all flashing locations, high – low wall locations from roof transitions and as noted and detailed on drawings. Flashing to be supported on a slope to the exterior with through wall flashing or sloped rigid insulation.
8. Base Wall TWF Membrane: Blueskin SA TWF by Bakor (Air Bloc 21 and Blueskin Primer or Aquatac Primer as per manufacturers installation instructions). Base wall flashing to be supported on a slope to the exterior. Where there is no support, provide sloped rigid insulation angle or mortar wedge.
9. Masonry Weep Holes and Vents: QV – Quatro-Vent weep hole ventilator as by Hohmann & Barnard Inc. or Cellvent by Blok-Lok (colour to match mortar colour and as selected by Architect).
10. Dovetail Anchor Slots and Ties (poured in place concrete): Stainless steel dovetail anchor slots, 305 Dovetail Slot by Hohmann & Barnard Inc. or BL-305 Dovetail Slot by Blok-Lok. Minimum 9 gauge 315 Flexible Dovetail Brick Tie by Hohmann & Barnard Inc. or BLT-8 Dovetail Flex-O-Lok Anchor by Blok-Lok. Approved Alternate: Fero Thermal Tie stainless steel Heavy Duty Rap-Tie with insulation support and V-Tie legs with brass expansion bolt or stainless steel anchors may be substituted for the Dovetail Anchors Slots and Ties noted above. Remove the insulation support where the wall system does not have an air space (below or near grade applications)

2.4 **FABRICATION**

1. Fabricate cast stone masonry units to sizes and profiles as indicated on drawings.
2. Fabricate Arris-cast, or approved alternative, units using the Vibrant Dry Tamp Casting method.
3. Do not use dark mineral admixtures in surfaces intended to be exposed to view.
4. Steam cure cast stone units at a minimum temperature of 104 degrees F for a minimum of 10 hours at 100% humidity.
5. Yard cure units for 350 degree-days prior to shipping.

2.5 **FABRICATION TOLERANCES**

1. Cross Section Dimensions: not deviating by more than plus or minus 1/8 inch from approved dimensions.
2. Length of Units: not deviating by more than L/360 or plus or minus 1/8 inch, whichever is greater, maximum plus or minus 1/4 inch.

3. Warp, Bow or Twist of Units: maximum L/360 or plus or minus 1/8 inch, whichever is greater.
4. Location of Dowel Holes, Anchor Slots, Flashing Grooves, False Joints: maximum deviation as follows:
 1. On Formed Sides of Unit: 1/8 inch.
 2. On Unformed Sides of Unit: 3/8 inch.

2.6 **FINISHES**

1. Exposed Surfaces: fine-grained texture similar to natural stone, White (or equivalent) with sandblasted finish free of cracks, chips or other defects that would affect the strength or serviceability of the unit or become exposed once installed and visible when viewed from a distance of not less than 15 feet under diffused light. Note that **all exposed** surfaces to be finished.

PART 3 - EXECUTION

3.1 EXAMINATION

1. The Contractor shall, together with any and all other sub-contractors involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
2. Contractor shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the sub-contractors for correction prior to commencing the work of this section.
3. Commencement of the work of this section shall imply acceptance of all surfaces and conditions.
4. Proceed with installation only after unsatisfactory conditions have been corrected.
5. Inspect materials for fit and finish prior to installation. Do not set unacceptable units.

3.2 PREPARATION

1. Clean surfaces thoroughly prior to installation.

3.3 INSTALLATION

1. Install in accordance with manufacturer's installation instructions and recommendations.
2. Install Arris-cast, or approved alternative, units where indicated on Drawings. Conform to TMS 402-13/ACI 530- 13/ASCE 5-13, Building Code Requirements for Masonry Structures and TMS 602-02/ACI 530.1-02/ASCE 6-02, Specifications for Masonry Structures.
3. Drench units with clean water prior to setting.
4. Fill dowel holes and anchor slots completely with mortar or non-shrink grout.
5. Set units in full bed of mortar, unless otherwise detailed. Flush vertical joints full with mortar.
6. Maintain 3/8-inch-wide joints.
7. Leave joints with exposed tops or under relieving angles open for sealant.
8. Leave head joints in copings and projecting components open for sealant.
9. Rake mortar joints 3/4 inch for pointing or sealing.
10. Remove excess mortar from unit faces immediately after setting.
11. Tuck point unit joints to a slight concave profile, except those designated to receive joint sealant.
12. Seal remaining joints with backer rod and joint sealant. Conform to Section 07900.

3.3 SITE TOLERANCES

1. Variation in Alignment from Unit to Adjacent Unit: 1/16 inch maximum.

2. Variation of Mortar Joint Thickness: 1/8 inch every 3 feet.

3.4 FIELD QUALITY CONTROL

1. Test one randomly selected sample from the field for each 500 cubic feet delivered to the job site. Verify compliance with the following:
 1. Three field cut cube specimens from each of these samples shall have an average minimum compressive strength of not less than 85 percent with no single specimen testing less than 75 percent of design strength as allowed by ACI318.
 2. Three field cut cube specimens from each of these samples shall have an average maximum cold-water absorption of 6 percent.
2. Consultant Review: The Consultant will review installed masonry and reject masonry that is chipped, cracked, or blemished (streaked, stained or otherwise damaged), as described below.
 1. Masonry will be inspected to be free of chips, cracks or other blemishes on the finished face or front edges of the masonry units exceeding 3/8 inch or that can be seen from a distance of 10 feet.
 2. Units shall exhibit a texture approximately equal to the approved sample when viewed under direct daylight illumination at a 10 feet distance.
 3. Minor chipping resulting from shipment and delivery shall not be grounds for rejection. Minor chips shall not be obvious under direct daylight illumination from a 20 feet distance.
 4. Crazeing and efflorescence will not be cause for rejection.
3. Make good, rejected masonry as directed by the Consultant, at no additional cost to Owner.

3.5 CLEANING

1. Clean in conformance with Division 1 General Requirements.
2. Repair chips with touchup materials furnished by manufacturer.

3.6 PROTECTION

1. Protect units from damage resulting from subsequent operations.
2. Use protection materials and methods which will not stain or damage units.
3. Remove protection materials upon substantial performance of the work, or when risk of damage is no longer present.

END OF SECTION

PART 1 – GENERAL

1.1 **SUMMARY**

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. Supply and install cavity closures, steel bollards, bench and shelf supports, steel bracket supports and angles, sectional door head and jambs, miscellaneous items, etc.
 2. Provide all miscellaneous metals (including all types of metals (steel and aluminum)) items as detailed and indicated on drawings and as noted under other specification sections.

1.2 **REFERENCES & QUALIFICATIONS**

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaw and the Ontario Ministry of Labour - all as currently amended.
2. **Certificates:**
 1. Provide a certificate signed and sealed by the licensed/registered professional engineer responsible for the designs and the detailed steel connections stating that the connections have been designed, detailed and fabricated in accordance with the applicable standards.
 2. Certification must bear the original seal and signature of the engineer and be dated. Photocopies are not acceptable.
 3. Clearly indicate construction details, sizes of steel sections, thickness or gauge of steel sheet, connections, joints, method of anchorage, number of anchors, supports, reinforcement and accessories. Confirm all dimensions on site.
 4. Fabrication and erection of all components to be by companies holding current C.W.B. Certification as Division 1 or Division 2.1. All welding by welders holding current certification for the required welding position.
3. **References: (All as currently amended)**
 1. ASTM A53/A53m-02 – “Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless”.
 2. ASTM A307-21 – “Standard Specification for Carbon Steel Bolts, Studs and Threaded Rod 60,000 PSI Tensile Strength”.
 3. ASTM A325-02 – “Specification for High-Strength Bolts for Structural Steel Joints”.
 4. ASTM A653/A653M-20 – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process”.
 5. ASTM A1011/A1011M-18a – “Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low Alloy, High-Strength Low Alloy with Improved Formability, and Ultra-High Strength”.

6. ASTM F3125/F3125M-21 - "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".
7. CAN/CGSB-1.40-97 – "Primer, Structural Steel Oil Alkyd Type".
8. CAN/CGSB-1.181-99 - "Ready-Mixed Organic Zinc-Rich Coating".
9. CAN/CGSB-1.81 – "Air Drying and Baking Alkyd Primer for Vehicles and Equipment".
10. CSA-G40.20/G40.21-13 – "General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steels".
11. CSA-G164-18 - "Hot Dip Galvanizing of Irregularly Shaped Articles".
12. CSA-S16:19 - "Design of Steel Structures", Limit States Design principles".
13. CSA-S136-16 - "North American Specification for the Design of Cold Formed Steel Structural Members".
14. CSA-W.47.1-09 - "Certification of Companies for Fusion Welding of Steel".
15. CSA-W55.3-08 - "Certification of companies for resistance welding of steel and aluminum".
16. CSA-W59.2-18 - "Welded Aluminum Construction".
17. CSA-W59-13 - "Welded Steel Construction (Metal Arc Welding)".
18. CSA-W59-18 – "Welded Steel Construction".

1.3 **SUBMITTALS**

1. Provide submittals in accordance with Section 01300 – Submittals.
2. Shop drawings:
 1. Shop drawings shall be submitted by the specified manufacturer only.
 2. Before shop drawings and fabrication is started, take critical measurements at the site to facilitate installation and fitting of work. Where field measurements cannot be made without delaying the work, guarantee dimensions and proceed with fabrication of wall panel assemblies corresponding to the established dimensions.
 3. Shop drawings shall be of best quality craftsmanship, incorporating specific job details not generic details.
 4. Shop drawings that are submitted are to be in the units of the tendered drawings, metric is mandatory with imperial as additional alternate is acceptable.
 5. Fabrication drawings shall be stamped by a Professional Structural Engineer registered in the Province of Ontario.
 6. No fabrication and or installation shall commence until all shop drawings have been approved.

1.4 ALLOWANCES

1. N/A

PART 2 - PRODUCTS

2.1 MATERIALS

1. Ferrous Metals:
 1. Unless otherwise indicated, hot rolled mild steel in .15% to .25% carbon range.
 2. Steel sections and plate: CSA-G40.20/G40.21-13, minimum 260W grade.
 3. Square steel tube: CSA-G40.20/G40.21-13, Grade 350W.
 4. Steel pipe: ASTM A53/A53m-02, Type E, Grade A.
 5. Sheet Steel: hot dip galvanized, cold rolled, with stretcher level degree of flatness to ASTM A653/A653M-20; zinc coating designation Z275.
2. Aluminum: CSA HA Series for aluminum and aluminum alloys, Alcan 50S Alloy.
3. Prime Paint: Oil alkyd type (shop coat) conforming to CAN/CGSB-1.40-97. Colour to be grey.
4. Expansion Joints: as specified.
5. Welding Materials: CSA W59.
6. Bituminous Enamel: Alkali resistant asphaltic coating conforming to CAN/CGSB-1.181-99.
7. Non-shrink Grout: premixed, non-shrink, non-metallic aggregate; compressive strength to suit application.
 1. Acceptable Products:
 1. Sika Canada Inc. - Sika Grout 212 Regular
 2. Euclid Admixture Canada Inc. - NS Grout
 3. W. R. Meadows of Canada Ltd - Non-Metallic Grout
 4. CPD Services - Non-Shrink (premixed)
 5. Por-Rok by Hallemite Products Ltd.
 6. Or approved alternative
8. Galvanized Touch-Up Paint: Zinc rich, ZRC Galviline Galvanizing repair compound or approved equal.
9. Hot Dipped Galvanizing: conform to CSA-G164-18.
10. Bolts and Anchor Bolts: to ASTM A307-21.
11. Stainless Steel: Type 304 interior locations / Type 316 exterior locations, finish to AISI No.4 brushed finish ornamental grade and 2B matte finish where appearance is not important.

2.2 FABRICATION - GENERAL

1. Fabricate components in the shop in largest size practicable to minimize field jointing.
2. Fabricate components square, straight, true, free from warpage and other defects. Accurately cut, machine file and fit joints, corners, copes and mitres.
3. Reinforce fabricated components to safely withstand expected loads.
4. Make joints in built-up sections with hairline joints in least conspicuous locations and manner.
5. Make allowance for thermal expansion and contraction when fabricating exterior work.
6. Joints shall be welded unless otherwise indicated and unless details of construction do not permit welding. Exposed welds shall be continuous and shall be ground smooth.
7. Close exposed open ends of tubular members with welded on steel plugs.
8. Where work of other Sections is to be attached to work of this section, prepare work by drilling and tapping holes, as required to facilitate installation of such other work.
9. Work of this Section, supplied for installation under other Sections, shall be prepared as required ready for installation by: drilling, countersinking and tapping holes, forming shapes and cutting to required sizes.
10. Grind off mill stampings and fill recessed markings on steel components left exposed to view.
11. Make workmanship of best grade of modern shop and field practice known to recognized manufacturers specializing in this work. Fit joints and intersecting members accurately. Make work plumb, true, square, straight, level and accurate to sizes and shapes detailed, free from distortion or defects detrimental to appearance or performance.
12. Insulate metals where necessary to prevent corrosion due to contact between dissimilar metals and between metals and masonry, concrete or plaster. Use bituminous paint, butyl tape, building paper or other approved means.
13. Supply all fastenings, anchors and accessories required for fabrication and erection of the work. Make exposed metal fastenings and accessories of same material, texture, colour and finish as base metal on which they occur unless otherwise shown or specified. Keep exposed fastenings to an absolute minimum and inconspicuous, spacing them evenly and setting them out neatly. Make fastenings of permanent type.
14. Draw mechanical joints to hairline tightness and seal countersunk screws and access holes for locking screws with metal filler where these occur on exposed surface.

2.3 FINISHES

1. Thoroughly clean steel of loose scale, rust, oil, dirt and other foreign matter. Prepare steel surfaces to receive specified finishes by power tool cleaning.
2. Grind smooth sharp projections.
3. Remove oil and grease by solvent cleaning.
4. Apply coatings in the shop and before assembly. Where size permits, galvanize components after assembly.

5. Shop apply coat of primer to interior components after fabrication except where galvanized finish and stainless steel is required.
6. Hot dip galvanize exterior components and other components, where so indicated, after fabrication in accord with requirements of CSA Standard G164-M1981. Where on site welding, grinding, drilling, etc. is required, touch up galvanizing material is to be applied to all areas where galvanizing is removed and raw metal is exposed.
7. Apply coat of bituminous enamel to contact surfaces of metal components in contact with cementitious materials and dissimilar metals.
8. After erection and installation, thoroughly clean the work and apply field touch up of same formula as shop coat to all damaged or unpainted surfaces. Work all paint well into all joints, crevices and open spaces.

2.4 MISCELLANEOUS STEEL SECTIONS

1. Supply all miscellaneous steel angles, plates, lintels, etc., indicated on the architectural drawings & not indicated on the structural drawings or noted on the structural drawings by others. Size according to loads, set plumb and true and securely fix. Continuously weld and grind smooth exposed connections. Others may be welded or bolted.

PART 3 - EXECUTION

3.1 INSTALLATION

1. Install components plumb, square, straight and true to line. Drill, cut and fit as necessary to attach this work to adjoining work.
2. Provide temporary supports and bracing required to position components until they are permanently anchored in place.
3. Securely anchor components in place; unless otherwise indicated, anchor components as follows:
 1. To concrete and solid masonry with expansion shields and bolts.
 2. To hollow construction with toggle bolts.
 3. To thin metal with screws or bolts.
 4. To thick metal with bolts or by welding.
 5. Fill space between railing members and sleeves with non-shrink grout.
 6. To wood with bolts or lag screws.
4. Provide all components required for anchoring. Make anchoring in concealed manner wherever possible. Make exposed fastenings, where approved by the Consultant neatly and of same material, colour, texture and finish as base metal on which they occur. Keep exposed fastenings evenly spaced.
5. Dissimilar metals and metals in contact with cementitious elements shall have contact surfaces coated with bituminous paint or be isolated by other means as approved by the Consultant.
6. After installation, clean and refinish injured finishes, welds, bolt heads and nuts. Refinish with zinc rich paint or primer to match original finish.

3.2 SECTIONAL STRUCTURAL STEEL DOOR JAMB AND HEAD SURROUND FRAMING

1. Provide hot dipped galvanized door jamb and head surrounds as noted and where shown on drawings.

3.3 BENCH, BRACKETS, AND SHELF SUPPORTS

1. Provide all metal angles and brackets to wood benches, and coat hook brackets for extent noted or as otherwise required. Refer to drawings and details for size and shapes where applicable.
2. Provide 1/4" (6.5 mm) thick steel brackets for benches at 600mm o/c maximum.
3. Where metal materials are shown on drawings as not galvanized or stainless steel, such railings shall be shop primed for painting. Painting to be done under Section 09900.
4. Prepare all metal work, ready to receive wood members by Section 06200.

3.4 MISCELLANEOUS ITEMS, STEEL BRACKETS SUPPORTS AND ANGLES

1. Supply for installation by respective trades, steel brackets, supports, and angles as indicated on drawings or as otherwise required. Drill for countersunk screws and anchor bolts. Prime paint for interior, galvanize for exterior.
2. Provide support brackets for vanities and counters, cabinets and storage units as indicated. These items are part of the allowance of miscellaneous items supplied to the millwork contractor.
3. Provide steel miscellaneous angles and hanger rods as indicated.
4. Provide other metal fabrications which are not a part of a manufactured item or covered under another section in Division 5. Coordinate to drawings.

3.5 BOLLARDS

1. Supply and install hot-dipped galvanized steel bollards as shown on Drawings. Bollards shall be ASTM 500 B seamless structural grade 152mm diameter minimum Schedule 40 (7.11mm / 0.28") x 1219.4 (4') height exposed above grade, 2200mm total length. Install approximately 1000mm into a 500mm diameter 25 MPa concrete foundation (foundation top to be below grade 250-300mm). Fill bollard with 25 MPa concrete and round top for water drainage. Round top of footing for water drainage also. Location of Bollards: as indicated on drawings and Site Plan. Coordinate with Bollard Detail.

3.6 STAINLESS STEEL CAVITY CLOSURES

1. Provide cavity closures as detailed and noted on drawings or as otherwise required.
2. Closures: 12 gauge (2.7mm / 0.105"), 304 stainless steel with 2B finish cold rolled formed to suit continuous bent closure profile:
 - around all window and curtain wall openings;
 - around all door openings,
 - around all other misc. openings through exterior cavity wall
 - at expansion joints and control joints

Closure(s) to have dimensions to meet cavity wall insulation thickness / depth on outward extending flange. Anchorage flange to be 75mm (3") minimum unless noted otherwise by misc. metals engineer. Do not over exceed insulation and air space cavity dimensions as to block off drainage and air space, this is to remain free of infill to breathe and drain.

3. Coordinate with opening infill provider / supplier for all forces closures are to resist along with fastening strength requirements.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. Coordinate all locations shown on drawings and for all items noted herein.

1.2 REFERENCES & QUALIFICATIONS

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaw and the Ontario Ministry of Labour - all as currently amended. In case of conflict between Codes, the Ontario Building Code will govern.

1.3 SUBMITTALS

1. Provide submittals in accordance with Section 01300 – Submittals.

1.4 DELIVERY & STORAGE

1. Materials shall be protected from damage and kept dry during delivery and while stored at job site.
2. Do not store materials in areas where glazing is not complete or concrete completely dry.

PART 2 - PRODUCTS

2.1 MATERIALS

1. **Sawn lumber:** No. 2 spruce, pine or fir (SPF) of best merchantable lumber, straight and sized, shaped to the correct dimensions from the nominal sizes noted on the drawings and specified herein. Lumber shall be well-seasoned stock, free from large loose resinous knots, shake, waned edges, splits, dry rot or other defects which would impair its strength or durability.
2. **Moisture content:** all lumber for rough carpentry, at time of building-in, shall not exceed 17%.
3. **Wood Preservative:** C.C.A. (chromium copper arseniate) by "Wolmanized".
4. **Rough Bucks, Battens, Blocking, Framing:** Eastern Spruce, Jack Pine or Fir No. 2 or better.
5. **Exterior Rough Bucks Batten Blocking, Framing and Plywood and Interior Wood Attached to Masonry or Concrete:** Jack Pine No. 2 or better "Wolmanized" pressure treated wood conforming to C.S.A. 081.1-M1983. Sizes as indicated on drawings and/or as required. All pressure treated lumber shall bear the trademark "Wolmanized" and bear a mark certifying conformance with AWPB Standard LP-2 or LP-22.
6. **Fire Retardant Lumber:** to be CSA 080.20 DRICON FRT Lumber and plywood distributed by J. Brewer (Canada) Ltd; (519) 621-7701. Sizes as indicated on drawings and/or as required.
7. **Grounds, Nailing Strips, Strapping, Furring:** Eastern Spruce or Jack Pine Construction Grade allowing 10% to 15% standard grade.

8. Plywood Sheathing:
 1. Construction Grade: Spruce plywood, thickness and plies as shown on the drawings; to CAN/CSA O151-09 (R2014), 'Canadian Softwood Plywood'.
 2. Paint Grade: Good one side fir plywood sheathing, exterior type, conforming to C.S.A. 0121-M1978. Square edge or T&G as required.
 3. Fir plywood: to CSA O121-08 (R2013), 'Douglas Fir Plywood'.
9. Galvanized Nails and Spikes, Carriage Bolts, Screws and Washers: Hot dipped galvanized nails and spikes for exterior work and mill galvanized for interior work.
10. Nails, Spikes and Staples: C.S.A. B111-1974, plain finish. Use spiral thread nails.
11. Adhesive: waterproof wood adhesive, to CAN/CGSB-71.26-M88, 'Adhesive for Field-Gluing Plywood to Lumber Framing for Floor Systems'.
12. Sill Gaskets: See Section 07190 Vapour Barriers.
13. Acoustical Caulking: See Section 07900 Sealants and Caulking.

PART 3 - EXECUTION

3.1 WORKMANSHIP

1. Work shall be executed by skilled carpenters according to best practice, as specified herein and indicated on drawings.
2. Lay out work carefully and to accommodate work of other trades. Accurately cut and fit, erect in proper position, true to dimensions, align, level, square, plumb, adequately brace and secure permanently in place.
3. Bore holes for bolted work true to line and same size as bolts, drive into place for snug fit, use plate or washer to prevent nut from bearing directly on wood, and turn up nuts, bolts and lag screws tight at time of installation and again immediately before being concealed with other work or at completion of work.
4. Give painter sufficient notice so that untreated or unprimed carpentry items or materials shall be primed immediately upon delivery to site.
5. Cooperate with others engaged in work on the building to the end that proper unity of action will assure the orderly progress of the work. Do necessary boxing and protecting of sills, jambs, corners, and the like. Construct scaffold, ramps, and other temporary staging necessary.
6. All fastening to be compliant with OBC Part 9 minimum or better. Coordinate with structural drawings for additional fastening and any other engineered building system for additional information.

3.2 WOOD PRESERVATIVE

1. Treat fresh cut ends of all pressure-treated wood with two coats of preservative before installation where factory end is cut and factory preservative is removed.

3.3 ROUGH HARDWARE

1. Supply rough hardware such as nails, bolts, nuts, washer, screws, clips, strap iron, and hardware for temporary enclosures.

3.4 ROOF CURBS, BASES AND SUPPORTS

1. Construct pressure treated wood roof curbs for ventilation ducts, fan bases, etc., as detailed or required by other trades. Construct suitable approved pads to receive duct supports. Note tops of all curbs for roof top units shall be a minimum 14" (350 mm) above finished roof surface.

3.5 ROUGH BUCKS, GROUNDS, BLOCKING, STRAPPING, FURRING

1. Furring, blocking or strapping indicated is not to be regarded as exact or complete. Provide adequate nailing. Provide additional block where denoted on the drawings and to facilitate wall mounted equipment.
2. Cut grounds and screeds in long lengths as practical with square ends. Erect to create true, plumb planes and fasten rigidly in place.
3. Provide minimum 2" x 4" (38 mm x 89 mm) blocking as necessary for attachment of base, trim, cabinets, fixtures, hardware, miscellaneous specialties, equipment and the like unless indicated otherwise. Cut ends square and fasten rigidly to building structure.
4. Rough bucks shall be minimum 2" (38 mm) thick wood of width indicated, set straight, true and plumb, braced and fastened securely in place.
5. For general strapping, set treated wood strips vertically spaced 16" (400 mm) on centre, unless otherwise indicated. Shim so faces form a true plane. Provide intermediate horizontal strapping at all joints to wall finishes applied over grounds.

3.6 FRAMING

1. Frame walls, partitions, roofs, platforms, etc., as indicated.
2. Set wood joists 16" (400 mm) o.c. unless otherwise noted, using a single bottom plate and double top plates. Double studs at openings and triple at corners and partition intersections. Provide one row of horizontal bridging of same material as studs. Coordinate with standards opening framing details.
3. Install members plumb, level, true to line and uniformly spaced, to lines and elevations shown on the drawings.
4. Install spanning members with 'crown-edge' up.
5. Install dampproof course under stud sill plate of partitions in contact with concrete. Coordinate with damp proofing details, Sill Gaskets see Section 07190 Vapour Barriers and Acoustical Caulking see Section 07900 Sealants and Caulking.

3.7 ROOF SHEATHING

1. Install all plywood with face grain perpendicular to framing members.
2. Install plywood with end joints on solid backers / blocking / framing / bearing.
3. Install 'H' clips between framing members on all sheathing with square edge. Coordinate with roof types.

4. Apply waterproof adhesive to all bearing surfaces, in continuous beads, prior to placing plywood, and according to manufacturers printed instructions on all sheathing with tongue and groove. Coordinate with roof types.

3.8 FLOOR SHEATHING

1. Install all plywood with face grain perpendicular to framing members.
2. Install plywood with end joints on solid backers / blocking / framing / bearing.
3. Apply waterproof adhesive to all bearing surfaces and joints, in continuous beads, prior to placing plywood, and according to manufacturers printed instructions on all wood floor systems.

3.9 BLOCKING

1. Provide minimum 38mm x 89mm (2"x4") blocking or size as required for secure attachment of base, trims, cabinets, fixtures, miscellaneous specialties, equipment etc. and the like unless specified otherwise. Cut ends square and fasten rigidly to building structure.

3.10 PARAPETS

1. Supply and install pressure treated wood block and framing as detailed, and exterior grade pressure treated plywood at parapets, and include blocking to allow ventilation from masonry cavity over exterior masonry allowing ventilation behind parapet flashing. Create vented space using 1" x 3" (19 mm x 75 mm) cutouts in blocking at 16" (400 mm) o.c. for ventilation. All cut ends to be primed with two (2) coats of wood preservative. Coordinate installation of air/vapour barrier membrane at back and top of parapets with roofing and masonry trades. Installation of membrane by masonry/air barrier trade. Refer to drawings for typical detail. Secure parapet wood frame blocking to block and brick securely with tapcon type fasteners into masonry with a min. of two (2) fasteners for each wood member at every 16" on centre.

3.11 FIRE RETARDANT WOOD

1. Electric and Telephone Backboards and Panel Boards: Supply and install 19 mm thick backboards and panel boards, fire pressure treated, fir plywood. Consult electrical drawings for locations and requirements. Provide wood strapping as required. Fasten to wall using fasteners and spacing suitable to wall type to provide secure, sturdy installation which will carry equipment load without damaging.

3.12 WINDOW SILLS

1. Supply and install first layer of plywood subsill (pressure treated at windowsills). Second layer, nosing and any plastic laminate noted by Finish Carpentry. Refer to drawings for detail and locations.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. Provide all labour, materials, and equipment for the supply and placement of the gang nailed wood trusses shown on the drawing as necessary to complete the Work.
 2. Provide all labour, design, materials, and equipment for the supply and placement of the required bridging and bracing for the wood trusses.

1.2 REFERENCES & QUALIFICATIONS

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaw and the Ontario Ministry of Labour - all as currently amended. In case of conflict between Codes, the Ontario Building Code will govern.
2. Do fabrication of wood trusses in accordance with CAN/CSA-O86, 'Engineering Design in Wood'.
3. **Design Criteria:**
 1. Design roof trusses, bracing, bridging, and connectors in accordance with CAN/CSA-O86, to safely carry building code loads.
 2. Design (or specify) truss anchorage to the building.
 3. Where gypsum board ceilings are hung directly from trusses, limit live load deflection to 1/360th of span.
4. Identify lumber by grade stamp of an agency certified by Canadian Lumber Standards Administration Board.

1.3 SUBMITTALS

1. Shop drawings must be submitted to and reviewed by the Consultant prior to manufacturing the trusses.
2. Submit shop drawings in accordance with the General Requirements.
3. Clearly indicate the truss design company, the address, telephone and facsimile numbers of the truss design company, and the person responsible for the design on the shop drawing.
4. Each shop drawing submitted to the Consultant shall bear the stamp of a qualified professional engineer registered in the Province of Ontario.
5. Loads resulting from snow drift conditions or other special conditions shall be clearly shown on the shop drawings.
6. Indicate species, sizes, and stress grades of lumber used as truss members. Show pitch, span, camber configuration, and spacing of trusses. Indicate connector types, thicknesses, sizes, locations and design value. Show bearing details including anchorage to building.

7. Submit stress diagram indicating design load on each truss member, special loads, allowable stress increase and deflection limits.
8. Indicate the following on the truss design shop drawing:
 1. top chord bracing interval
 2. bottom chord bracing interval
 3. web bracing locations and size of bracing.
9. Submit print-out of computer design.
10. Indicate arrangement of webs or other members to accommodate ducts and other specialties.
11. Level plans associated below the truss system are to be shown on the shop drawings for coordination of the locations of openings through the system (ie. Roof top access ladder openings, mechanical ducting, shafts, etc.).
12. Roof plan including architectural, mechanical and electrical disciplines are to be shown on the shop drawings for coordination of the locations of openings through the system along with roof top equipment supporting member locations (ie. Roof top equipment, generators, mechanical units, mechanical ducting, etc.).

PART 2 - PRODUCTS

2.1 MATERIALS

1. Lumber: No. 2 S-P-F, or better, with maximum moisture content of 19% at time of fabrication and in accordance with the following standards:
 1. CAN/CSA O141, Softwood Lumber.
 2. NLGA Standard Grading Rules for Canadian Lumber, 2010.
2. Fastenings: to CAN/CSA-O86

PART 3 - EXECUTION

3.1 FABRICATION

1. Fabricate wood trusses in accordance with reviewed shop drawings.
2. Cut truss members to accurate length, angle, and size to assure tight joints for finished trusses.
3. Assemble truss members in design configuration by securing tightly in jigs or with clamps.
4. Provide for design camber when positioning truss members.
5. Connect members using metal connector plates.

3.2 DELIVERY AND STORAGE

1. Site to which trusses are to arrive shall be relatively flat, firm and dry.
2. All trusses to come tightly banded together and to remain in this condition until installed.
3. Check trusses on arrival to ensure that none have been damaged while in transport. Contractor responsible to replace damaged Trusses, at no additional cost to Owner.

4. Store trusses on job site in accordance with manufacturer's instructions. Provide bearing supports and bracing to prevent bending or overturning of trusses during transit and storage.
5. Length of truss storage on site not to exceed one week.

3.3 ERECTION

1. Lifting points, as indicated, shall be used to hoist trusses into position.
2. Exercise care to prevent out-of-plane bending of trusses.
3. Install temporary horizontal and cross bracing to hold trusses plumb and in safe condition until permanent bracing is installed.
4. Install permanent bracing and related components prior to application of loads to trusses.
5. Trusses with loose connector plates are not acceptable.
6. Restrict construction loads to prevent overstressing of truss members.
7. **Do not cut or drill any truss member.**
8. Remove with fine sandpaper, chemical deposits on treated wood to receive applied finishes.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. The work of this section shall include for wood work materials, painted hardwood, painted wood window sills. Coordinate all locations shown on drawings and for all items located herein.

1.2 REFERENCES & QUALIFICATIONS

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaw and the Ontario Ministry of Labour, - all as currently amended.
2. Standard of finished carpentry, metal work and cabinet work in accordance with the "Architectural Millwork Standards" of the Architectural Woodwork Manufacturers Association of Canada (AWMAC).
3. The work of this trade shall be executed by a company having a minimum of 5 years proven first class experience in this type of work and having adequate equipment and skilled personnel.
4. Moisture content of finish material to be dried to a uniform maximum of 12% for exterior work and 6% to 8% for interior work.

1.3 SUBMITTALS

1. Provide submittals in accordance with Section 01300 – Submittals.
2. **Product Data:** for all products specified herein, including product data, manufacturer's specifications and installation instructions.
3. **Shop drawings:**
 1. Before shop drawings and fabrication is started, take critical measurements at the site to facilitate installation and fitting of work.
 2. Show all locations required, construction methods, joints, termination details, hardware, etc. Indicate layout, size and description of components, base material, surface finish inside and out, hardware and locks, attachment devices, description of rough-in-frame, etc
4. **Samples:**
 1. Duplicate 12" (300 mm) long samples of each type of moulding, where applicable.

1.4 MAINTENANCE DATA & MATERIALS

1. **Data:** provide maintenance data in Operation and Maintenance Manual.
2. **Materials:** N/A

1.5 ALLOWANCES

1. N/A

1.6 DELIVERY & STORAGE

1. Arrange for early deliveries necessary for execution of work without delay and have materials on job well in advance of the time it is needed to avoid construction delays.
2. Deliver, store and handle materials to exclude foreign material and prevent damage, soiling or breakage.
3. Delivery to the job site shall be coordinated by the General Contractor.
4. Materials stored on site which need to be protected from weather shall be so protected.
5. Give Painter sufficient notice so that untreated or unpainted carpentry items or materials can be primed immediately upon delivery to site.
6. No equipment shall be delivered to the site until a portion of the building in which it is to be installed is completely ready for equipment as approved by the Consultant.
7. Store finished work properly and keep under cover both in transit and at site. Finish woodwork shall not be delivered to site until concrete and masonry work has dried out.
8. Cover all plastic laminate and melamine faces at shop with heavy Kraft Paper.
9. Check access clearance at site before assembling.
10. Handle materials carefully to prevent damage.

1.7 SPECIAL PROTECTION

1. Provide adequate protection of materials and work of this Section from damage by on site storage, weather, construction activities and other causes.
2. Protect the work of other sections from damage resulting from work of this section and protect the work of this section from damage resulting from work of other sections. Make good such damage to the satisfaction of the Consultant.
3. Contractor to exercise protective treatment and other precautions required through the construction period, to ensure that items listed will be without damage or deterioration other than normal weathering and wear.
4. If items are damaged / soiled as noted above, items are to be replaced / repaired at contractor's expense, not extra cost to the contract.
5. Consult with section of work soiled before cleaning to ensure methods used will not damage their work.
6. All patching and repair due to damage by other trades, shall be performed under this section and paid for by the trade responsible for the damage.

1.8 WARRANTY

1. The work and materials of this section shall be warranted in accordance with GC 12.3 of CCDC Document 2 and SC 3.44 of the City of Brantford's Supplementary Conditions, most current issuance, but for a period of **five (5)** years from the date of Consultant's Certificate of Substantial Performance

1.9 SEQUENCING & SCHEDULING

1. Ensure all work is installed and completed that will be concealed by this work.
2. The Contractor shall cooperate in the coordination and scheduling of the product to avoid delays in job progress.

1.10 PROJECT SITE CONDITIONS (ENVIRONMENTAL CONDITIONS)

1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 - PRODUCTS

2.1 MATERIALS

1. Finishing Work: Materials used for finish work shall be sound, free from defects that would mar finished appearance, well seasoned (means the water at a cellular level has left the wood) and air dried and of good quality for intended purposes. Wood laminates pressure bonded.
2. Painted Hardwood: American Poplar ("White Wood") "C" select grade.
3. Framing Lumber: No. 2 or better spruce, pine or fir best mercantile lumber.
4. Pressure Treated Wood: Conforming to Section 06100, sizes as indicated and detailed. Note: Warped, twisted, loose or missing knots in wood will not accepted.
5. Adhesive: As recommended by manufacturer for required application and to conform to C.S.A. 0121-M1978.
6. Exposed fasteners: All exposed fasteners to be stainless steel. At exposed screw locations use stainless steel screws and cup washers.
7. Nails, Spikes and Staples: To C.S.A. B111-1974, plain finish nails. Use spiral thread nails and barbed staples.

PART 3 - EXECUTION

3.1 EXAMINATION

1. The Contractor shall, together with any and all other subcontractors involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
2. Contractor shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the subcontractor for correction prior to commencing the work of this section.
3. Commencement of the work of this section shall imply acceptance of all surfaces and conditions.
4. Proceed with installation only after unsatisfactory conditions have been corrected.
5. Verify that the opening sizes and tolerances are acceptable.

3.2 **PREPARATION**

1. Clean surfaces thoroughly prior to installation.
2. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 **GENERAL**

1. **WORKMANSHIP**

1. Work shall be executed by mechanics skilled in their respective trade, according to best practice, or specified herein and indicated on drawings.
2. Check job dimensions and conditions and notify the Consultant in writing of unacceptable conditions. Do not proceed until remedial instructions are received. Commencement of work will imply acceptance of site conditions and re-working or modification of the work as deemed necessary by the Consultant will be done at no extra cost to the Owner.
3. As far as practical, assemble work at the shop and deliver to the job ready for installation. Leave ample allowance for fitting and scribing on the job.
4. Fabricate work square and to the required lines.
5. Lay out work carefully as indicated and to accommodate work of other trades. Accurately cut and fit; erect in proper position true to dimensions. Align, level, square, plumb, adequately brace, and secure permanently in place.
6. Use treated lumber for studs, blocking nailers, furring and other wood permanently installed in building. Brush coat freshly cut ends with two coats of concentrated form of preservative.
7. Recess and conceal fasteners and anchor heads. Fill with matching wood plugs. Set nail heads and fasteners occurring within exposed interior carpentry work.
8. Provide wood members free from bruises, blemishes, mineral marks, knots, shake and other defects and select for uniform colour grain and texture. Machine and hand sand surfaces exposed in the finished work to an even, smooth surface free from defects detrimental to appearance.
9. Provide running members in the maximum lengths obtainable. Provide thickness of members in maximum dressed size of standard lumber. Where thickness of width indicated is not available in hardwoods, use glue laminations to obtain sizes required. Provide unexposed backs of veneers having the same physical characteristics as the face veneer.
10. Give painter sufficient notice so that untreated or unprimed carpentry items or materials can be primed immediately upon delivery to site. No exposed end grain of plywood shall be permitted; edging shall be solid 3/8" (10 mm) wide by thickness of plywood and of same species of wood. Finger jointed edging will not be accepted.
11. Co-operate with others engaged in work on the building to the end that proper unity of action will assure the orderly progress of the work. Do necessary boxing and protecting of sills, jambs, corners and the like. Construct scaffold, ramps, and other temporary staging necessary.

12. Chamfer edges of plastic laminate to avoid chipping.

3.4 INSTALLATION

1. Install in accordance with manufacturer's installation instructions and recommendations along with approved submittals.
2. Coordinate with mechanical and electrical for any final connections.
3. Dissimilar metals in contact or metals and masonry or concrete, when necessary to prevent corrosion, to be insulated one from another by methods and materials required for such results, as approved by the Consultant.
4. Deliver finish carpentry to the site. Provide units of such sizes as will not present difficulty of entry to the place of installation. Where units are shipped in knock-down forms, provide clear instructions for assembly.
5. Install finish carpentry items plumb, square, true, rigid and secure with concealed fastening at exposed areas and with stainless steel screws and cup washers where secured inside of millwork units.

6. TRIM

1. Work includes miscellaneous trim as required of maple unless indicated otherwise.
2. Trim members shall be of sizes and profiles indicated. Trim members shall be slow-fed work, free from chatter and other machine marks.
3. Install trim after it has been backprimed.
4. Members shall be full length and secured with wire nails, set and holes filled.
5. Mitre all joints.

7. PAINTED HARDWOOD SILLS AND WINDOW SURROUNDS

1. Construct window sills using base layer of pressure treated plywood and top finish layer of non-treated painted hardwood with painted hardwood nosing as detailed on drawings. Install over air/vapour barrier. Supply and installation of first layer of plywood by Section 06100, remaining sill by this section.
2. Construct window jambs and head using base layer of pressure treated plywood and top finish layer of non-treated painted hardwood with painted hardwood casing (19mm (3/4") thick x 75mm (3") wide profiled router edge)

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. All millworks, including but not limited to prefinished cabinet bases, uppers, display cases, shelving units, counters, vanities, window sills, and similar items where shown on drawings and as specified herein, and as needed for a complete and proper installation.
 2. Provision of rough hardware, including fastening devices required to secure in place items of carpentry and millwork.
 3. Supply and installation of finishing hardware for millwork (cabinet hardware, pilaster strips, and locks) by this section.
 4. Supply and installation of grilles, etc. on millwork items.
 5. Provide cutouts in counter tops for the sinks, electrical outlets and all other necessary cutouts regarding millwork.
 6. Installation of all miscellaneous metals for millwork items by Section 05500 Miscellaneous Metals.
 7. Supply and installation of miscellaneous trims, scribes, filler panels.
 8. The intent of this Section is that casework shall be manufactured and finished at the plant, delivered to the Site and immediately installed by this Section including provision of necessary strapping, backings, bearers, rough hardware and finish hardware and miscellaneous support metals and stainless-steel metal components. Touch up finish immediately prior to completion of the Work and leave in perfect condition.

1.2 REFERENCES & QUALIFICATIONS

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaw and the Ontario Ministry of Labour, all as currently amended.
2. Finished carpentry, metal work and cabinet work in accordance with the "Millwork Standards" of the Architectural Woodwork Manufacturers Association of Canada (AWMAC).
3. The work of this trade shall be executed by a company having a minimum of five (5) years proven experience in this type of work and having adequate equipment and skilled personnel.
4. Wood to be to standard with National Lumber Grades Authority (NLGA).

1.3 SUBMITTALS

1. Provide submittals in accordance with Section 01300 – Submittals.

2. Product Data: for all products specified herein, including product data, manufacturer's specifications and installation instructions.
3. Shop Drawings:
 1. Before shop drawings and fabrication is started, take critical measurements at the site to facilitate installation and fitting of work.
 2. Shop drawings shall show fabrication details, construction methods, materials, jointing, description of anchorage and hardware.
 3. Colours as selected by the Owner to be accompanied with a hardcopy colour chart for selection, all colour selections to be from the manufacturer's standard list of colours.
4. Samples:
 1. Submit samples of all materials and hardware for review.
 2. Submit 300mm x 300mm (12"x12") samples of each type of paneling (plastic laminate, melamine c/w edging) and each type of solid wood or plywood to receive stain or natural finish.
 3. Submit 300mm (12") long samples of each type of molding.
 4. All cabinet work, to be shop finished by this Section as per Section 09900.
5. Mock Ups: N/A

1.4 MAINTENANCE DATA & MATERIALS

1. Data: Provide maintenance data in Operation and Maintenance Manual.
2. Materials: N/A

1.5 ALLOWANCES

1. Totality of finished millwork subject to allowance as noted in Section 01020.

1.6 DELIVERY AND STORAGE

1. Arrange for early deliveries necessary for execution of work without delay and have materials on job well in advance of the time it is needed to avoid construction delays.
2. Deliver, store and handle materials to exclude foreign material and prevent damage, soiling or breakage.
3. Delivery to the job site shall be coordinated by the General Contractor.
4. No equipment shall be delivered to the site until portion of the building in which it is to be installed is completely ready for equipment as approved by the Consultant.
5. Store finished work properly and keep under cover both in transit and at site. Finish woodwork shall not be delivered to site until concrete and masonry work has dried out.

6. Store in manufacturers unopened packing in a secure, dry and warm area, with adequate ventilation, free from dust and water location in accordance with manufacturer's printed directions until installation can proceed.
7. All items to be packaged and labelled with description of contents along with numbering or nomenclature used on shop drawings. Each item is to be individually wrapped in protective crating or packaging complete with all fittings and accessories as required.
8. Handle materials carefully to prevent damage.

1.7 SPECIAL PROTECTION

1. Provide adequate protection of materials and work of this Section from damage by on site storage, weather, construction activities and other causes.
2. Protect the work of other sections from damage resulting from work of this section and protect the work of this section from damage resulting from work of other sections. Make good such damage to the satisfaction of the Consultant.
3. Contractor to exercise protective treatment and other precautions required through the construction period, to ensure that items listed will be without damage or deterioration other than normal weathering and wear.
4. If items are damaged as noted, items are to be replaced / repaired at contractor's expense, not extra cost to the contract.
5. Consult with section of work soiled before cleaning to ensure methods used will not damage their work.
6. All patching and repair due to damage by other trades, shall be performed under this section and paid for by the trade responsible for the damage.
7. Cover all plastic laminate and prefinished top surfaces at shop with heavy Kraft Paper.

1.8 WARRANTY

1. The work and materials of this section shall be warrantied in accordance with GC 12.3 of CCDC Document 2 and SC 3.44 of the City of Brantford's Supplementary Conditions, most current issuance, but for a period of **5 (five)** years from the date of Consultant's Certificate of Substantial Performance.

1.9 SEQUENCING & SCHEDULING

1. Ensure all work is installed and completed that will be concealed by this work.
2. Work of this Section shall be coordinated with work of other Sections where such work is adjacent to or dependent on the placement of the work of this Section. Review all drawings for all such related work and coordinate scheduling, sizes, mounting location, required cutouts, wall/roof/floor blocking, clearances, etc. required for proper installation of all related work. Modification of the work of this section due to lack of coordination will be done at no extra cost to the Owner.
3. Water, drainage and air piping, faucets, traps, ventilation ducts, sinks, electric receptacles and wiring are supplied and installed by the Mechanical and Electrical Sections at all rooms. Coordinate the work with these trades and make provision in the construction of the fitments to accommodate this work. Methods of construction shall be such as to permit mechanical and electrical work being concealed in the fitments, cut and

frame accordingly, provide removal access panels in the units or provide proper access for installation and repairs.

4. Give painter sufficient notice of woodwork, not shop primed, so that untreated or unprimed carpentry items or materials can be primed and back painted as per painting section immediately upon delivery to site.
5. Surfaces cut after priming to be brush coated with an approved primer before installation. Back paint woodwork and trim installed directly against masonry with one coat of priming paint before installation.
6. The Contractor shall cooperate in the coordination and scheduling of the product to avoid delays in job progress.

1.10 PROJECT SITE CONDITIONS (ENVIRONMENTAL CONDITIONS)

1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 - PRODUCTS

2.1 MATERIALS

1. Finishing Work: Materials used for finish work shall be sound, free from defects that would mar finished appearance, well seasoned (means the water at a cellular level has left the wood) and air dried and of good quality for intended purposes. Wood laminates pressure bonded.
2. Plywood Concealed by Construction: Douglas Fir plywood shall be veneer core, laminated with waterproof adhesive, bonded, sanded, complying with C.S.A. 0121-M1978 as currently amended. Solid grade where concealed by construction.
3. Plywood For Countertops: Pressure treated / waterproof Douglas Fir plywood shall be veneer core, laminated with waterproof adhesive, bonded, sanded, complying with C.S.A. 0121-M1978 as currently amended. Solid grade where concealed by construction.
4. Concealed Framing Lumber: N.L.G.A. (National Lumber Grades Authority) select eastern white pine, kiln dried to a 5% moisture content.
5. Unexposed Plywood for Framing: waterproof fir plywood minimum 12.7mm (1/2") thickness unless indicated otherwise.
6. Adhesive:
 1. Approved waterproof type; waterproof synthetic resinous glue of approved general type conforming to CSA 0112-M as currently amended.
 2. For plastic laminate - as recommended by plastic laminate manufacturer and to conform to C.S.A. 0121-M1978.
7. Plastic Laminate:
 1. Laminated Plastic for Flatwork: 1.6mm (0.062") thick decorative, plywood surfaced, high pressure laminated plastic sheeting to conform to CAN3-A172-M1979 (High Pressure, Paper, Decorative Laminates and all applicable

- requirements of O.B.C. (not limited to flame spread rating and smoke development classification), Grade G.P., Type 1. Manufacturer shall thoroughly sand back of sheet to form a homogeneous bonding surface. Plastic laminates shall be as manufactured by Arborite, Formica, Wilsonart, Nevamar, or approved alternative. Backing sheet 0.5mm (0.020") thick, sanded one side. Products may be selected based upon manufacturer's full standard range of colours, patterns and textures including (stippled) textured finish.
2. Laminated plastic for postforming work and preforming work: To CAN3-A172- M79 Grade P.F., Type 3, 1.25 mm (0.050") thick, based on standard colours with suede finishes as selected by the Consultant. Plastic laminates shall be as noted in 1.
 3. Consultant's Plastic Laminate selections are as follows:
 1. PLAM1 (Casework Interiors): Formica 918-58 Neutral White
 2. PLAM2 (Casework Exteriors): Formica 5488-58 Smokey Brown Pear
 3. PLAM3 (Countertops): Formica 6698-58 Paloma Polar
 4. Or approved alternative. Final colours to be approved by Owner.
 8. Melamine Faced Particle Board: to CAN3-0.188.0-M78, grade "R" particle board sanded faces, 13mm (1/2"), 16mm (5/8"), 19mm (3/4"), 28.6mm (1 1/8") and 32mm (1 1/4") thickness, faced with laminated plastic. Melamine resin impregnated cover sheet with coloured and/or patterned paper inner layer. Melamine shall be thermally fused to rigid particle board substrate. Melamine faces shall be 120 Gram Weight Paper. Maximum three colours/patterns to be chosen by the Owner from manufacturer's standard range.
 9. Wood Edging: 3mm (1/8") hardwood to match plywood unless indicated otherwise (for maple, use hard maple).
 10. PVC Edge Banding: solid polyvinylchloride (PVC), 3mm (1/8") thickness x full width of board thickness to match each type of melamine colour choice. Finish to be selected by the Consultant.
 11. Shelves: adjustable shelves longer than 950mm (37.4") and fixed shelves without centre supports longer than 950mm (37.4") to be 28.6mm (1.13") thick wood veneer plywood. Shelves shorter than lengths specified above are to be 19mm (0.75") thick wood veneer plywood core. Front and rear edges of adjustable shelves to have solid wood / pvc edges. Front edges of fixed shelves to have solid wood / pvc edges, rear edge to be secured to cabinet back panel.
 12. Miscellaneous Metals: miscellaneous angles, tubes, brackets, supports, etc. as noted/ detailed on drawings or as required for complete and proper installation. Provided by Section 05500.
 13. Exposed Fasteners: all millwork units secured to walls shall be secured with screws and cup washers. All specialty fasteners such as acorn head bolts shall be supplied and installed by this section. Submit samples for the Consultant's approval. All exposed fasteners to be stainless steel.
 14. Nails and Staples: Use spiral threaded nails and barbed staples.
 15. Reveal: Anodized aluminum reveal, 16mm wide and deep unless otherwise as indicated on drawings

2.2 **HARDWARE**

1. The cabinet work manufacturer shall furnish and install cabinet hardware. Finish of hardware shall be used US26D (Satin Chrome) or US28 (Satin Aluminum, clear coated) depending on base material:
 1. Hinges: cupboard doors, 19mm (3/4") door thickness minimum, steel / die-cast zinc nickel plated finish.
 1. Hettich Intermat, 110°/125° degree opening, 90° degree opening at end wall conditions, self closing, soft close, dowel or screw on; full overlay, half overlay or inset hinge (coordinate with cabinetry type), or approved alternative,.
 2. Other specialized hinges as required, ie. Corner units.
 2. Pulls (door/drawers): Richelieu Product #BP245170, 170Finish, or approved alternative.
 3. Drawer Slides: material to be stainless steel, all drawer slides to allow drawer to be fully accessible when pulled out, all drawers to be full depth, soft close.
 1. Hettich full extension ball bearing slide KA 5632, 45lbs (for one and four drawer cabinets), with silent system soft, automatic closure, or approved alternative.
 2. Hettich full extension ball bearing slide KA 4620, 90lbs (for two drawer cabinets), with silent system soft, automatic closure, or approved alternative.
 6. Adjustable Levellers: Heavy duty, 650 lb. maximum load capacity per leveller,
 1. Richelieu, Product # 230E1590 & 2200990, or approved alternative.
 2. Computer Grommets: standard recessed 75mm (3") diameter, where applicable.
 3. Shelf Support/Pin: for pre-drilled holes in all gables, anti-slip. Finish to be anodized or equivalent.
 1. Richelieu Product #12352180, or approved alternative.
 2. Hafele Shelf Support, Anti-slip ø5mm #282.04.712, or approved alternative.
 4. Shelf Brackets (fixed shelves): finish to be SS or equivalent.
 1. Hafele Work surface brackets, rigid #28774705, or approved alternative.
 5. Silencer bumpers: Mechanically fastened rubber or neoprene bumper (at all cupboard door and drawer fronts).
 6. Coat Rods:
 1. 1219mm (4'-0") span or less: Knap & Vogt 750 5 series Commercial Heavy-duty round closet rod 33mm (1 5/16" o/d). Finish to be chrome. Or approved alternative.
 2. Over 1219mm (4'-0") span: Knap & Vogt 770 5 series Commercial Extra-duty round closet rod (1 5/16" o/d). Finish to be chrome. Or approved alternative.

7. Garbage and Recycling (if selected by Owner under allowance):

1. Richelieu Soft-Closing Euro-Cargo Recycling Center Product #8461440100, 50L capacity, interior dimensions required: 362mm min. width, 530mm min. depth, 546mm min. height, gray finish, bin capacity: 1 x 40.2 qt (38L) + 1 x 12.6 qt (12L) with self-closing lid. Or approved alternative.

8. Adjustable Leveller Legs:

1. Richelieu Product #22010390, or approved alternative.

2.3 FABRICATION

1. General

1. Fitments shall be machined, assembled in mill where possible and delivered to job in units. Construct in accordance with details using first class cabinet construction with joints dowelled, glued and properly fastened.
2. Check job dimensions and conditions and notify the Consultant in writing of unacceptable conditions. Design construction methods for expansion. Do not proceed until remedial instructions are received.
3. Deliver work to the job ready for installation. Leave ample allowance for fitting and scribing on the job. Shop assemble work for delivery to site in size easily handled and to ensure passage through building openings. Design units to fit together if site assembly is required.
4. Fabricate work square and to the required lines. Recess and conceal fasteners and anchor heads. Fill with matching wood plugs.
5. Comply with glue manufacturer's recommendations for lumber moisture content, glue life, pot life, working life, mixing spreading, assembly time, time under pressure and ambient temperature.
6. The interior of counters, cupboards, shelving units, desks, exposed to the naked eye without any workable operation shall be considered "exposed". Counter tops which are to receive plastic laminate coverings may be 19mm (3/4") thick sanded veneer core plywood. Plywood platewood core shall be used for shelving and gables, countertops and high moisture areas unless specifically called for as solid material. Provide biscuit wafers fully glued at all counter top butt joints c/w two draw bolts Richelieu 516-2G, or approved alternative.
7. Refer to Drawings and Architectural for location, details, number of units required and location of fittings.
8. Interior fitments shall be complete in every respect with special fittings required and hardware.
9. Provide exposed end grain of solid members and edges of exposed plywood with matching solid hardwood edging at least 6.4mm (1/4") thick and thicker where specified. At melamine faced particle board (alternate price) provide 3mm (1/8") P.V.C. edging complete with 3mm (1/8") radius on all exposed edges and corners. Edging to melamine faced particle board shall be applied with an Edge- Bander using hot melt adhesive.

10. Make all necessary cut-outs in the furniture for sinks, appliances, and electrical switch and outlet boxes and pre-drill all mounting holes for faucets, fittings and outlet boxes. Refer to electrical and mechanical drawings and specifications.
11. Provide and install pipe covers, scribing pieces, top, bottom and/or closures and filler panels where necessary, including wherever units require furring out or blocking to existing conduits, pipes, etc.
12. Service cover panels to be provided at all kneehole drawer units, kneehole front rails and knee drawer table assemblies. End closing panels to be provided at all exposed ends of service strips and island/peninsula assemblies. Front filler panels to be provided where called for on Drawings and as required by field conditions.
13. Telephone and electrical receptacles and wiring are specified under Electrical Division. Co-ordinate all work of this trade, make provision to accommodate this work and cut tops for and provide wood bearers/blocking for support.
14. Cooperate with others engaged in work on the building to the end that proper unity of action will assure the orderly progress of the work. Do necessary boxing and protecting of sills, jambs, and the like. Construct scaffold, ramps, and other temporary staging necessary.
15. Provide 19mm (3/4") plywood adjustable or fixed shelving as detailed. Maximum unsupported span for shelving shall be 900mm (3' 0"). Fixed shelves shall be housed into gables and divisions. Where adjustable shelves are set on angle clips on metal pilaster strips occurring on both sides of a divider, they shall be staggered. NOTE: All adjustable shelves on metal pilasters shall have pilaster recessed flush with face of the gables. Where shelves are set on clips only, gables shall be drilled 32mm (1 1/4") o.c. for total height of gables. Provide 3 rows of holes and clips for shelves deeper than 400mm (15 3/4"). All adjustable / loose shelves shall have finished edges on all edges.
16. The plywood used in interior fitments throughout regardless of whether for paint or stain finish, shall have exposed edges edged with solid strips 6mm (1/4") wide, unless noted otherwise by full thickness of plywood. No exposed edges of plywood will be permitted. Strips shall be glued and accurately fixed to edges. Adjustable shelves shall have strips applied to front edge.
17. Exposed framing members and trim shall be solid hard maple or birch.
18. Plastic laminate coverings to fitments, cupboards and counters shall be in colours selected by the Owner and applied in accordance with manufacturer's directions. Where plastic laminate occurs, exposed edges and edges around cut-outs such as sinks shall be edged in the same material. Where tops and splashbacks are indicated, the laminate backing sheets shall be used on back face of material on which plastic laminate facing sheets are applied to minimize twist. Bond plastic laminate using waterproof glue. Self edging shall be 1.5mm (1/16") material electro pressure sealed and with edges beveled. Joints will not be permitted except in lengths exceeding 2400mm (8' 0") in length. Butt joints tightly together. Chamfer edges of plastic laminate to avoid chipping. Apply backing sheet to plywood. Seal remaining exposed edges of surfaces with heavy Kraft paper prior to shipment. Paper shall not be removed until final cleaning. When cutting holes in plastic laminate work, corners shall be rounded and filed smooth.

19. When cutting holes in plastic laminate work, corners shall be rounded and filed smooth.
20. Protection erected by this trade shall be removed, damage to this work and adjoining work due to the lack or failure of such protection, made good at no additional cost to owner and debris, surplus materials, plant and equipment removed and premises and the whole left clean and tidy to the Consultant's satisfaction.
21. Fabricate all plywood and melamine faced particle board backs, gables and bottoms of millwork units together by means of 8mm (5/16") x 25mm (1") hardwood dowels or with hardwood biscuits. All backs to be 16mm (5/8") stock. Dowel all panel cabinet components using 5mm (3/16") x 25mm (1") hardwood dowels or biscuits at maximum 100mm (4") o.c. All drawer bottoms and backs are 51mm (2") stock or greater. All exposed edges to be at least 6.4mm (1/4") thick matching hardwood edge banding at Maple units and thicker where specified. At melamine faced particle board (alternate price) provide 3mm (1/8") P.V.C. edging complete with 3mm (1/8") radius on all exposed edges and corners. Kick material for normal application shall be 19mm (3/4") waterproof fir plywood to be used. Resilient base by Section 09650 and quarry tile base by Section 09300.
22. Cupboard Doors
 1. Typical cabinet doors shall be 19mm (3/4") thick Europly, or approved alternative, core veneer plywood. Doors shall be flush, slab type, accurately fitted, free of warp and twist. Care must be taken in sawing and assembling so that there is no splintering of finish face. Splintered doors that mar the appearance will be rejected by the Consultant.
 2. Provide two door silencers/bumpers per panel mechanically fastened to the cabinet frames.
23. Drawers
 1. Fronts, sides and backs shall be solid. Fronts 19mm (3/4") thick, sides and backs 16mm (5/8") thick. Drawer bottoms shall be 16mm (5/8") thick plywood, grooved into sides and front and nailed to underside of drawer backs. Sides shall be fitted to fronts with dovetail joints, grooved to receive backs.
 2. Fronts to match cupboard doors finish.
 3. Provide all drawers with spring hinged stops to prevent accidental removal.
 4. Provide two drawer silencers / bumpers per drawer panel mechanically fastened to the cabinet frame.
24. Counters, Cupboards, Shelving, Circulation Desk etc.
 1. Frame as detailed:
 1. With 19mm (3/4") thick, or as noted otherwise, plywood gables, backs, tops and bottoms. House intermediate dividers and

plywood backs, into gables and top and bottom shelves, for all fitments.

1. Counter with non-drip edge at all sink counter locations only. No non-drip edge is to be installed at any end condition or desk locations.
 2. Cut countertops for sinks and provide bearers. Provide splash back / back splash at back of sink for entire length of the unit.
 3. Provide removable plywood access panels, screwed in place, where necessary for access to concealed wiring.
 4. Fit trim and scribe moulds to fitments as shown and as required to hide voids at walls, partitions and ceilings.
 5. Provide cut-outs for inserts, outlets, grilles, appliances, etc. occurring in fitments.
 6. Bottom of units blocked up to form a 100mm (4") high x 75mm (3") deep toe space and fabricated with plywood tenoned to gables (for melamine units as well).
 7. Fit fillers between fitments, of same material as fitments, where necessary to fill voids between fitments and walls.
 8. Corners of countertops that do not butt against a wall or fixed object, shall be rounded with 25mm (1") radius corners.
 9. Lighting fixtures and outlets to be supplied and installed under Electrical. Provide all necessary cutouts, clearances, etc. for work by Electrical.
 10. Provide cutouts and access panels where required for Mechanical and covers over ductwork (stove exhaust fans) or piping that run exposed above counters and upper shelves. Coordinate with Mechanical for locations and quantities.
 11. Provide extended top, bottom, and exposed gables where furring out of upper cupboards is required due to pipes, conduits, and the like behind to provide a flush face at walls.
 12. Side splash at counter tops required only when the distance between the side of a sink and the adjacent vertical surface is less than 400mm (15 $\frac{3}{4}$ ").
25. Plastic Laminate Work:
1. Comply with CAN3-A172-M79, Appendix "A".
 2. 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. Provide cores of not less than 19mm (3/4") nominal thickness solid face Douglas Fir.

3. Form shaped profiles and bends as indicated, using postforming grade laminate to laminate manufacturer's instructions.
4. Use straight self-edging laminate strip 1.6 mm (1/16") thick for flatwork to cover exposed edge of core material. Chamfer exposed edges uniformly at approximately 20 deg. Do not mitre laminate edges. Curved self edging shall be postformed material or bending grade.
5. Apply laminate backing sheet to reverse side of core of plastic laminate work. Provide backing sheet of sufficient thickness to compensate for stresses caused by the facing sheet.
6. Locate joints where indicated, where not indicated at approximately 2440mm (8'-0") or 3660mm (12'-0") centers also include joints at corners, and changes in superficial area.
7. Accurately fit decorative laminate together to provide tight, flush, butt joints. Joints in cored panels shall be made with 6mm (3") blind splines and draw bolts, one draw bolt for widths up to 150mm (6"), two or more draw bolts at maximum 450mm (18") o.c. for widths exceeding 150mm (6").
8. Keep joints min. 300mm (2'-0") from sink cutouts.
9. Seal the core at joints and exposed edges with sealer.

PART 3 - EXECUTION

3.1 EXAMINATION

1. The Contractor shall, together with any and all other subcontractors involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
2. Contractor shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the subcontractor for correction prior to commencing the work of this section.
3. Commencement of the work of this section shall imply acceptance of all surfaces and conditions.
4. Proceed with installation only after unsatisfactory conditions have been corrected.
5. Verify that the opening sizes and tolerances are acceptable.

3.2 PREPARATION

1. Clean surfaces thoroughly prior to installation.
2. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 WORKMANSHIP

1. Fabricate and install work in accordance with the best practice. Finished work shall be free from drag, feathers, slivers or roughness of any kind. Remove machine marks by sanding. Give finished work smooth surfaces, ready for painting or varnish application.
2. Mortise and tenon joints shall be glued and pinned. All panels shall be secured together with specified glued and dowelled method. Glue blind screw all fabricated component work unless otherwise specified. Set surface nails and plug countersunk screws with matching wood plugs. Use screws with cap washers where units with doors are secured to walls behind.
3. Finished woodwork shall be free from bruises, blemishes, mineral marks, knots, shakes and other defects.
4. All metal items such as grilles, tracks, supports, legs, brackets, etc. supplied by other trades shall be built into fitments, paneling, wood doors, etc., in strict accordance with directions of trades supplying such.
5. Furnish rough hardware, nails, expansion shields, screws, brackets and incidentals required to assemble and install the fitments in their proper locations.
6. Fit small scribe moulds or fillers of same materials as fitment to hide or fill voids at walls, partitions ceilings, furrings, exposed tops of millwork units, at base locations where rubber base occurs.
7. Support for Hanging Cabinets and Shelves: All cabinets and shelves shall be supported 25mm (1") x 76mm (3") hardwood bearers and prevented from tipping with steel angles fastened to top of cabinet or shelf, spaced 900mm (36") O.C. and lagged into wall surface. 1" (19mm) x 2" (44mm) hardwood rails shall be at top and bottom of cabinet or shelf unit, secured into gables of units and fastened to supporting wall with expansion shields and lag screws. Where bulkheads occur over cabinets, upper framing shall be secured to the ceiling.
8. Fitments shall have joints dowelled and all joints shall be glued and nailed or screwed. All cabinet bases shall be of 19mm (3/4") plywood, blocked 914mm (3'-0") O.C. maximum and at corners.
9. Plastic laminates shall be pressure bonded to back-up board. Counter tops shall be self-edged and have plastic laminate covered back splash.
10. Plastic laminate surface shall be level, without bubbles and core ghosting. Core edges in counter cut outs shall be sealed with asphalt compound. All exposed plastic edges shall be matched and sanded.

3.4 INSTALLATION

11. Install in accordance with manufacturer's installation instructions and recommendations along with approved submittals.
12. Coordinate with mechanical and electrical for any final connections.
13. Installation and assembly work on the job shall be executed by skilled forces under supervision of a competent joinery foreman.
14. Furnish rough hardware, nails, expansion shields, screws, brackets and incidentals required to assemble and install fitments in proper locations. Units shall be adequately

fastened and secured in place with concealed fixings wherever possible. Include grounds and furring where required.

15. Fitments shall be installed level, plumb and true and complete in all respects.
16. Provide smooth surfaces with fastenings sunk and filled over to receive stain and sealer.
17. Use draw bolts in countertop joints. Two per joint to be Richelieu 516-2G, or approved alternative.
18. At junction of plastic laminate counter, back splash and adjacent wall finish, apply small bead of silicone sealant as per Section 07900 in colour as selected by the Consultant.
19. Apply water resistant building paper over wood framing members in contact with masonry or cementitious construction.
20. Test and ensure proper and smooth operation and make necessary adjustments until satisfactory results are obtained.

3.5 HARDWARE INSTALLATION

1. Locate hinges in accordance with manufacturer of hinge and with best standard practice. Set knobs, locks, and cylinders square with doors and escutcheons plumb. Apply accurately and neatly, to operate quietly and smoothly. Knobs shall turn easily; bolts slide freely and smoothly.
2. All cupboard doors and drawer locks except as noted below, shall be keyed alike in each room unless otherwise stated. All such keys shall be labeled as to their lock location and shall be turned over to the Owner. All locks, slide bolts, etc. shall be supplied with the appropriate strikes and screws. Provide slide bolts at all locked pair of doors on interior side of door leaf without lock.

NOTE: No locks on doors below sink units.

3. All pilaster strips, where specified, shall be recess mounted and installed with the numbers on the pilaster at equal heights.
4. All drawers shall be fitted with side mounted ball bearing drawer slides and spring hinged stops to prevent accidental removal.
5. At completion of the work, moving parts shall be gone over, made to work easily, smoothly and efficiently. Work carefully cleaned down and left in complete and finished condition satisfactory to the Owner and Consultant.

3.6 FLOORING BASE

1. Supply and installation of Resilient Base at millwork units as indicated is by Section 09650 for rubber base locations and Section 09300 for quarry tile locations.
2. Provide hardwood base to match millwork where rooms are finished with wood base

3.7 CLEAN-UP

1. Clean exposed surfaces using methods acceptable to the manufacturer which will not damage finish.
2. Repair finishes damaged during installation, restore finishes so no evidence remains of

corrective work. Repairs are to be done as directed by the manufacturer.

3. Remove and replace work that cannot be satisfactorily repaired, at no additional cost to Owner.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. Coordinate all locations shown on drawings and for all items located herein.
 2. All Vapour barrier / retarder and installation accessories for under concrete slabs.
 3. Radon venting and prevention requirements.

1.2 REFERENCES & QUALIFICATIONS

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaw and the Ontario Ministry of Labour - all as currently amended except where indicated otherwise on drawings or specified herein. In case of conflict between Codes, the Ontario Building Code will govern.
2. American Society for Testing and Materials (ASTM):
 1. ASTM E1745-11 Standard Specification for Plastic Water Vapour Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs.
 2. ASTM E1643-11 Selection, Design, Installation, and Inspection of Water Vapour Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.
3. Technical Reference - American Concrete Institute (ACI):
 1. ACI 302.2R-06 Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials.
4. Summary of test results per paragraph 9.3 of ASTM E 1745.
5. Manufacturer's samples and literature.
6. Manufacturer's installation instructions for placement, seaming and penetration repair instructions.
7. All mandatory ASTM E1745 testing must be performed on a single production roll per ASTM E1745 Section 8.1.
8. Strength: ASTM E1745 Class A.
9. Maintain permeance of less than 0.01 Perms [grains/(ft² · hr · inHg)] as tested in accordance with mandatory conditioning tests per ASTM E1745 Section 7.1 (7.1.1-7.1.5).

1.3 SUBMITTALS

1. Provide submittals in accordance with Section 01300 – Submittals.
2. Product Data: For all products specified herein, including product data, manufacturer's specifications and installation instructions.

3. Shop drawings: Show all locations required, construction joints, termination details, etc.
4. Samples: For all products specified herein.
5. Mock Ups: N/A

1.4 ALLOWANCES

1. N/A

1.5 SPECIAL PROTECTION

1. Provide adequate protection of materials and work of this Section from damage by on site storage, weather, construction activities and other causes.
2. Protect the work of other sections from damage resulting from work of this section. Make good such damage to the satisfaction of the Consultant.
3. Protect the work of this section from damage resulting from work of other sections. Make good such damage to the satisfaction of the Consultant.
4. Contractor to exercise protective treatment and other precautions required through the construction period, to ensure that items listed will be without damage or deterioration other than normal weathering and wear.
5. If items are damaged as noted above, items are to be replaced at Contractor's expense.

PART 2 - PRODUCTS

2.1 MATERIALS

1. Vapour barrier and Retarder products:
 1. Stego Wrap Vapour Barrier 0.38mm (15-mil) by Stego Industries LLC., (877) 464-7834
 2. Perminator HP (high puncture resistance) Vapour Barrier 15 mil. By W.R. Meadows and all associated accessories
 3. Or approved alternative

2.2 ACCESSORIES

1. Seams:
 1. Stego Tape by Stego Industries LLC, or approved alternative.
2. Penetrations of Vapour barrier:
 1. Stego Mastic by Stego Industries LLC, Radon prevention requires all penetrations to be sealed, mastic to be used to seal in addition to tape. Or approved alternative.
 2. Stego Tape by Stego Industries LLC Radon prevention requires all penetrations to be sealed, tape to be used in addition to mastic to seal in addition to tape. Or approved alternative.

3. Perimeter/edge seal:
 1. Stego Crete Claw by Stego Industries LLC
 2. Stego Tack Tape (double sided) by Stego Industries LLC
 3. Stego Term Bar by Stego Industries LLC
 4. Or approved alternative.
 5. Continuous caulking and backer rod (where applicable) around all perimeters

PART 3 - EXECUTION

3.1 PREPARATION

1. Ensure that subsoil is approved by the Consultant or Geotechnical Engineer and verified by the inspection and testing agency.
 1. Level and compact base material.
 2. Ensure granular requirements are installed at radon vent locations.

3.2 INSTALLATION

1. Install vapour barrier in accordance ASTM E1643 and manufacturers installation instructions with associated accessories.
 1. Unroll vapour barrier with the longest dimension parallel with the direction of the concrete placement and face laps away from the expected direction of the placement whenever possible.
 2. Return vapour barrier up the thickness of the floor slab at all exterior and interior wall or foundation conditions for a bond break. The perimeter seal recommendation can be addressed through various methods. When sealing to the slab, Crete-Claw is the preferred option, or approved alternative. When sealing to an existing footing, grade beam, or stem wall, the most effective options include the use of StegoTack Tape, Stego Term Bar, or both, or approved alternative..
 3. Overlap joints 300mm (12") seal with manufacturer's tape, ensure vapour barrier is clean and dry for proper adhesion and 100% seal.
 4. Seal all penetrations per manufacturer's instructions, no penetration of the vapour barrier is allowed except for reinforcing steel and permanent utilities. All penetrations are to be sealed with tape and mastic at radon prevention.
 5. Repair damaged areas by cutting patches of vapour barrier, overlapping damaged area 300mm (12") and taping all sides with tape.
 6. Seal protrusion such as drains or vents through floor system. All penetrations are to be caulked to floor sub-surface.
 7. Install continuous caulk and backer rod (backer rod where void allows) at all slab perimeters.

END OF SECTION

PART 1 – GENERAL

1.1 **SUMMARY**

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. Coordinate all locations shown on drawings and for all items located herein.
 2. This section includes polyethylene vapour barrier for installation at all warm sides of insulation at exterior assemblies, including wall, floor and roof locations, transition pieces / transition locations, underside sill plates in contact with concrete in contact with the ground, between studs in contact with masonry / concrete in contact with the ground.
 3. All other locations as noted and detailed on drawings.

1.2 **SUBMITTALS**

1. Provide submittals in accordance with Section 01300 – Submittals.
2. **Product Data:** For all products specified herein, including product data, manufacturer's specifications and installation instructions.
3. **Mock Ups:** Construct mock-up of sheet vapour barrier installation including one lap joint, and at one edge. Mock-up is to be part of wall specified. Allow 24 hr. for inspection of mock-up by Consultant before proceeding with vapour barrier work.

1.3 **DELIVERY & STORAGE**

1. Delivery to the job site shall be coordinated by the General Contractor.
2. Store in a secure and dry location until installation can proceed in accordance with manufacturers instructions.
3. All items to be packaged and labelled with description of contents along with numbering or nomenclature used on shop drawings and bearing brand and manufacturer's name.
4. Handle materials carefully to prevent damage.

1.4 **SPECIAL PROTECTION**

1. Provide adequate protection of materials and work of this Section from damage by on site storage, weather, construction activities and other causes.
2. Protect the work of other sections from damage resulting from work of this section and protect the work of this section from damage resulting from work of other sections. Make good such damage to the satisfaction of the Consultant.
3. Contractor to exercise protective treatment and other precautions required through the construction period, to ensure that items listed will be without damage or deterioration other than normal weathering and wear.

4. If items are damaged / soiled as noted above, items are to be replaced / repaired at contractor's expense, no extra cost to the contract.
5. Consult with section of work soiled before cleaning to ensure methods used will not damage their work.
6. All patching and repair due to damage by other subcontractors, shall be performed under this section and paid for by the subcontractor responsible for the damage.

1.5 **SEQUENCING & SCHEDULING**

1. Ensure all work is installed and completed that will be concealed by this work.

PART 2 – PRODUCTS

2.1 **MATERIALS**

1. Polyethylene Film Vapour Barrier: equal to CAN/CGSB-51.34. (min. 6 mil (150 um) thickness) for all areas (except for below concrete slabs on grade) complete with acoustical sealants.
 1. Interior Sill Plates (Horizontal): Supported on concrete in contact with the ground or *fill* shall be separated from the concrete by the vapour barrier.
 2. Exterior Sill Plates (Horizontal): Supported on concrete in contact with the ground or *fill* shall be separated from the concrete by a polyethylene foam gasket to compensate for any discrepancy in the concrete foundations followed by the vapour barrier on top.
 3. Metal framing (vertical to perpendicular wall): In contact with concrete in contact with the ground or *fill* shall be separated from the concrete by the vapour barrier.
 4. Exterior Stud Walls: Interior / warm side of insulation, install continuous vapour barrier and all transition pieces.
 5. Bond Break: Installed between building system surfaces for bond break.

2.1 **ACCESSORIES**

1. Staples: 3/8" (9.5mm) minimum leg.
2. Sealant: Tremco Acoustic Caulking, or approved alternative..
3. Tape: 3M No. Y-8086 Contractor's Sheathing Tape or Tuck tape as recommended by vapour barrier manufacturer, 50mm (2") wide at all joints.
4. Pre-Moulded Electrical Box Vapour Barrier: factory moulded polyethylene box for use with recessed electrical switch and outlet boxes by Iberville, Model No. 1004-VB, 5254- VB and any other format required.
 1. Ensure all penetrations are sealed 100% typical.

PART 3 - EXECUTION

3.1 EXAMINATION

1. Review substrate conditions and remove any sharp projectiles that will cause puncturing of the membrane.

3.2 INSTALLATION

1. Walls / Roof / Floor:
 1. Place polyethylene on warm side of insulation and tight to insulation at exterior wall and ceiling assemblies prior to installation of gypsum board to form continuous barrier.
 2. Use sheets of largest practical size to minimize joints.
 3. Secure vapour barrier to framing members and use sealant at joints. Lap joints 400mm (16") minimum and caulk complete joint with sealant over solid backing at joint, then tape all joints. Ensure joints occur over framing members.
 4. Caulk with sealant where screws or staples penetrate vapour barrier. Tape seal areas where nails or staples penetrate vapour barrier and at all points of penetration.
 5. Seal vapour barrier at points of penetration.
 6. Inspect sheets for continuity. Patch breaks and openings in vapour barriers. Tape seal.
 7. Take extreme care to ensure continuity of vapour barriers. Patch breaks and openings in vapour barriers.
 8. Cut sheet vapour barrier to form openings and ensure material is lapped and sealed at frames.
 9. Seal perimeter of sheet vapour barrier as follows:
 1. Apply continuous bead of sealant to substrate at perimeter of sheets.
 2. Lap sheet over sealant and press into sealant bead.
 3. Install staples through perimeter of sheets at sealant bead into wood substrate. Use tape to hold in place at metal, masonry and concrete substrate.
 10. Seal lap joints of sheet vapour barrier as follows:
 1. Attach first sheet to substrate.
 2. Apply continuous bead of sealant over solid backing at joint.
 3. Lap adjoining sheet minimum 150mm (6") and press into sealant bead.

4. Install staples through lapped sheets at sealant bead into wood substrate. Use tape to hold in place at metal substrate.
 5. Ensure that no gaps exist in sealant bead. Smooth out folds and ripples occurring in sheet over sealant.
11. Seal electrical switch and outlet device boxes that penetrate vapour barrier as follows:
 1. For sheet-type vapour barriers, install moulded box vapour barrier wrap boxes with polyethylene film sheet providing minimum 300mm (12") perimeter lap flange.
 2. Apply sealant to seal edges of flange to main vapour barrier and seal wiring penetrations through box cover.
12. Protect ceiling insulation with vapour barrier. Extend ceiling vapour barrier over all exterior and interior wall heads.
13. Attach warning labels to walls with vapour barrier.
2. Sill Plates / Studs in contact with concrete / masonry in contact with the ground:
 1. Provide two (2) continuous beads (one on each side of plates / studs).
 2. Tack vapour barrier in place to plates / studs as wide as the sill plate / stud minimum.
 3. All vapour barrier joints to be 150mm (6") overlap minimum.
 4. Install two (2) additional continuous beads of acoustical caulking onto vapour barrier or substrate before installation of sill plate / stud onto substrates.
 5. Fasten members down at 400mm on center minimum to spread / compress acoustical caulking.
 6. Coordinate with drawing damp proofing details.
3. Bond Breaks:
 1. Install between vertical concrete masonry unit wall(s) and abutting floor system for bond break.

END OF SECTION

PART 1 – GENERAL

1.1 **SUMMARY**

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. Materials and installation methods for air/vapour barrier located within cavity wall construction on warm side of insulation in all roof, wall, foundation, floor systems. All opening infill perimeters including but not limited to curtain wall, window, door, mechanical and electrical openings / penetrations, compartment control joint, expansion joints, bellowed flashings, parapets, expansion joint locations.
 2. Materials and installation methods for air/vapour barrier located in the non-accessible part of non masonry walls, such as roof tie-in to curtain wall and tie in over parapets and roof curbs on to roof deck.
 3. Materials and installation to bridge and seal openings and penetrations of window frames, fasteners, ties, roof deck, structural steel and similar leakage paths in the wall.
 4. All other locations as noted and detailed on drawings.

1.2 **REFERENCES & QUALIFICATIONS**

1. Quality assurance: all air/vapour barrier products shall be applied by a contractor currently approved by air/vapour barrier manufacturer and with mechanics with a minimum 5 years experience with the installation of this specified system. Provide written evidence of approval.

1.3 **SUBMITTALS**

1. Provide submittals in accordance with Section 01300 – Submittals.
2. **Product Data:** For all products specified herein, including product data, manufacturer's specifications, storage and handling requirements and recommendations, preparation and installation instructions, adjustment and alignment procedures and any special procedures.
3. **Shop drawings:** indicating all details of connections to roof decks and masonry flashings.
 1. Shop drawings shall be submitted by the specified manufacturer only.
 2. Before shop drawings and fabrication is started, take critical measurements at the site to facilitate installation and fitting of work. Where field measurements cannot be made without delaying the work, guarantee dimensions and proceed with fabrication corresponding to the established dimensions.
 3. Shop drawings shall be of best quality craftsmanship, incorporating specific job details not generic details.
 4. Shop drawings that are submitted are to be in the units of the tendered drawings, metric is mandatory with imperial as additional alternate is acceptable.
 5. Show all locations required, construction methods and details, joints, termination

details, etc. Indicate layout, size and description of components, and all other pertinent data and information.

6. No fabrication and or installation shall commence until all shop drawings have been approved.

4. Samples:

1. For all products specified herein.

5. Mock Ups & Reviews:

1. Install one example of each item detailed, specified, or noted with all associated components for the Consultant's review prior to installing any further replicated details.
2. Contractor is to notify the Consultant **seven (7) days** minimum prior to any on-site mock-up(s) and / or review(s).

1.4 **MAINTENANCE DATA & MATERIALS**

1. Data: N/a.
2. Materials: N/a.

1.5 **ALLOWANCES**

1. N/A

1.6 **DELIVERY AND STORAGE**

1. Arrange for early deliveries necessary for execution of work without delay and have materials on job well in advance of the time it is needed to avoid construction delays.
2. Deliver, store and handle materials to exclude foreign material and prevent damage, soiling or breakage.
3. Delivery to the job site shall be coordinated by the General Contractor.
4. Materials stored on site which need to be protected from weather shall be so protected.
5. Store in manufacturers unopened packing labelled with description of contents along with numbering or nomenclature used on shop drawings and bearing brand and manufacturer's name in a secure, free from dust and water location in accordance with manufacturer's printed directions / instructions until installation can proceed. Inspect product upon receipt and report damaged material immediately to delivering carrier and note such damage on the carrier's freight bill of lading.
6. When stored at the job site, materials shall be protected from the weather by the proper use of raised platforms and waterproof coverings. Pallets of membrane shall not be double-stacked on the job site. Materials should not be stored at continuous temperatures above 38 deg. C. (100 deg. F.). Consult precaution statements on product label before use.
7. Storage of any material on or off the site is the responsibility of the contractor.

1.7 **SPECIAL PROTECTION**

1. Provide adequate protection of materials and work of this Section from damage by on site storage, weather, construction activities and other causes.
2. Protect the work of other sections from damage resulting from work of this section and protect the work of this section from damage resulting from work of other sections. Make good such damage to the satisfaction of the Consultant.
3. Contractor to exercise protective treatment and other precautions required through the construction period, to ensure that items listed will be without damage or deterioration other than normal weathering and wear.
4. If items are damaged / soiled as noted above, items are to be replaced / repaired at contractor's expense, not extra cost to the contract.
5. Consult with section of work soiled before cleaning to ensure methods used will not damage their work.
6. All patching and repair due to damage by other subcontractors, shall be performed under this section and paid for by the subcontractor responsible for the damage.

1.8 **WARRANTY**

1. The product manufacturer shall provide a certificate certifying the performance of their products for a period of **five (5)** years from the date of Substantial Performance.
2. The installation contractor shall provide a certificate certifying all work shall remain in place as installed free from any membrane defect for a period of **five (5)** years from the date of Substantial Performance.

1.9 **SEQUENCING & SCHEDULING**

1. Ensure all work is installed and completed that will be concealed by this work.
2. The Contractor shall cooperate in the coordination and scheduling of the product to avoid delays in job progress.
3. Sequence work to permit installation of materials in conjunction with related materials and seals.
4. Coordinate work of this section with all sections referencing this section.
5. Convene two weeks prior to commencing work of this section.

1.10 **PROJECT SITE CONDITIONS**

1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 - PRODUCTS

2.1 MATERIALS

1. Air/Vapour Barrier:
 1. Torch applied: Henry Bakor Blueskin TG modified bitumen, reinforced thermofusible membrane, with an average thickness of 100 mils. at non-heat sensitive areas. Or approved alternative.
 2. Self-Adhesive: Henry Bakor Blueskin SA may be used in heat sensitive areas. Or approved alternative.
2. Air/Vapour Barrier Transition Membrane:
 1. Torch applied: Henry Bakor Blueskin TG modified bitumen, reinforced thermofusible membrane, with an average thickness of 100 mils. at non-heat sensitive areas. Or approved alternative.
 2. Self-Adhesive: Henry Bakor Blueskin SA may be used in heat sensitive areas. Or approved alternative.
3. Primer / Adhesive for "Blueskin TG": Henry Bakor 930-18, or approved alternative..
4. Primer / Adhesive for "Blueskin SA": Henry Bakor Blueskin Adhesive, LVC Adhesive or Aquatac Primers (coordinate with manufacturer for correct product usage for specific installations) Or approved alternative.
5. Penetration Sealant (fill voids around building envelope penetrations): Henry Bakor 925 BES Sealant (prior to air barrier sealant) Or approved alternative.
6. Liquid Sealant (Around Openings, Pipe Penetrations Prior to Membrane Installation and after Penetration Sealant): Henry Bakor Air-Bloc 21 or Air-Block 21FR (Fire resistant – for fire rated wall systems) (coordinate with manufacturer for correct product usage for specific installations) Or approved alternative.
7. End of Membrane / Leading edge at end of workday Sealant: Henry Bakor Air-Bloc 21 or Air-Block 21FR (Fire resistant – for fire rated wall systems) (coordinate with manufacturer for correct product usage for specific installations) Or approved alternative.
8. Substrate Cleaner: Mineral spirits or xylol.
9. All Thru Wall S/S Flashings / S/S Drip Flashings: Stainless steel (S/S) 316, 2b finish, rolled, 24-gauge. Stainless steel flashings are to be formed and installed to suit through wall flashings above opening heads (window heads, door heads, mechanical louvres, curtain walls, entrance framing, etc.), at low roof high wall, or as indicated on drawings. Terminate top of stainless steel thru wall flashing sealed in reglet cut in concrete block (where applicable) with air-vapour barrier transition membrane over flashing sealed to wall substrate 200mm minimum.
10. All Copper Bellowed Flashings / Thru Wall Copper Support Flashing: ASTM Specification B370, cold rolled, copper weighing not less than 16 oz. per sq. ft. (3.15 kg per square metre). Copper flashings are to be formed and installed to suit through wall flashings at low roof high wall, at copper bellows, closures and water stop locations, or as indicated on drawings. Bellowed flashings are to have air-vapour barrier sealed to wall substrates / roof parapets both sides 200mm min. or sealed in opening infill framing. Copper flashings are required at all locations where there is no continuous structural or rigid insulation support, especially at cavity locations and/or expansion joint locations to support membranes.

PART 3 - EXECUTION

3.1 EXAMINATION

1. Verify that surfaces and conditions are suitable prior to commencing Work of this Section. Notify the Consultant in writing of any discrepancies. Commencement of work or any parts thereof will imply the acceptance of the substrate by the installer.
2. Ensure that:
 1. Surfaces are sound, dry, even, and free of oil, grease, dirt, excess mortar or other contaminants.
 2. Concrete surfaces are cured and dry, smooth without large voids, spoiled areas or sharp protrusions.
 3. Masonry joints are flush and completely filled with mortar, and all excess mortar sitting on masonry ties has been removed.

3.2 PREPARATION

1. Remove loose or foreign matter which might impair adhesion of materials.
2. Fill any voids with mastic substrate filler.
3. Clean and prime substrate joint/connection surfaces to receive transition strip in accordance with manufacturer's instructions.

3.3 INSTALLATION OF PRIMER

1. All surfaces required by manufacturer to receive air/vapour barrier must be completely primed by lambs wool roller, brush or spray equipment.
2. Apply at a rate of 4m²/L (200ft²/gal) depending on porosity and texture of surface or as directed by manufacturer.
3. Primed surfaces not covered during the same working day must be reprimed.

3.4 INSTALLATION OF AIR/VAPOUR BARRIER AND TRANSITION MEMBRANE

1. Install membrane horizontally with the sheet starting at the bottom and work progressing up the wall in an overlapping shingle fashion.
2. Position membrane for alignment. When membrane is in place, cut for ties or projections. When membrane is in place, apply heat to the underside of the membrane by propane torch at the point of contact with the substrate. Apply sufficient heat to make the bitumen tacky and firmly press membrane onto substrate to ensure complete contact and bond for the full extent of the membrane.
3. Overlap all joints in membrane a min. 2" (51 mm) and use a heated trowel to fully seal laps.
4. All inside corners shall be double covered with initial strap of 12" (300 mm) width centered.
5. Construction and control joints, double ply covered with initial strip of 6" (150 mm) width and second strip of 18" (460 mm) width.

6. Areas around drains, piping, vents, etc. shall be liberally coated with Air Bloc 21, or approved alternative, for radius of 6" (150 mm) around drain hub piping vents, etc. before and after application of membrane.
7. Seal around any openings with Air-Bloc 21, or approved alternative, with a minimum 2 ½" (64mm) overlap.
8. Seal end of membrane where it meets the substrate at the end of the days' work with Air-Bloc 21, or approved alternative.
9. At all detail areas ensure continuity of air/vapour barrier to ensure continuous air tightness, especially at all corners, junctions, window and door locations. In corners and difficult areas, use "Vedatex Adhesive", or approved alternative, to allow for sealing and application of reinforcing pieces of membrane.
10. Mechanical attachment must be made at windows, doors, louvres and curtain walls as per manufacturer's recommendations.
11. Install membrane down over metal through wall flashings (by Section 04200) with a min. 2" (50 mm) overlap at end joints.
12. Ensure all projections, including wall ties, are properly sealed by using a heated trowel to butter compound at the interface.

3.5 PRECAUTIONS

1. Do not leave membrane exposed for more than six (6) weeks. Install insulation as soon as possible to protect the membrane from damage by other trades.
2. Provide support for air/vapour barrier system on back and/or bottom side where it crossed over gaps such as masonry wall cavities, etc. Use copper flashing to support air/vapour barrier at gaps.

3.6 JOB COMPLETION

1. The Contractor shall inspect the completed membrane and correct all defects to meet the specification.
2. Clean up all debris, excess materials and equipment and remove from site.
3. Any drippage or spills of coating sealant, mastic or primers shall be cleaned.
4. The General Contractor shall restrict construction traffic and equipment movement near the completed air barrier to only essential related trades. For subcontractors continuing to work near the completed air barrier, appropriate protection shall be provided.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. Coordinate all locations shown on drawings and for all items located herein.
 2. All air barrier locations for breathable wall systems.
 3. Surface Preparation.
 4. Application of materials to provide bridge and seal air leakage pathways in:
 1. Wall and roof connections and penetrations.
 2. Connections to foundation walls.
 3. Walls, windows, curtain walls, storefronts, louvers or doors
 4. Expansion and control joints.
 5. Masonry ties.
 6. All other penetrations through the wall assembly.

1.2 REFERENCES & QUALIFICATIONS

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaw and the Ontario Ministry of Labour - all as currently amended.
2. **Qualifications:**
 1. **Installer Qualifications:**
 1. Use an experienced installer and adequate number of skilled personnel who are thoroughly trained and experienced in the application of the air barrier.
 1. Air Barrier Installer performing Work shall be approved by air barrier membrane manufacturer.
 2. Obtain air barrier materials from a single manufacturer regularly engaged in manufacturing the product.
 3. Provide products which comply with all state and local regulations controlling use of volatile organic compounds (VOCs).
3. **References: (All as currently amended)**
 1. AATCC 127 - American Association of Textile Chemists and Colorists (AATCC): AATCC 127 - Test Method for Water Resistance: Hydrostatic Pressure Test. AC 38.
 2. AC 38 - International Code Council Evaluation Service, Inc. (ICC-ES): ICC-ES AC38 - Acceptance Criteria for Water-Resistive Barriers.
 3. ASTM D882 – Standard Test Method for Tensile Properties of Thin Plastic Sheetings.

4. ASTM D1970 – Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
5. ASTM D3330 – Standard Test method for Peel Adhesion of Pressure-Sensitive Tape.
6. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
7. ASTM E96 - Standard Test Methods for Water Vapor Transmission of Materials.
8. ASTM E2178 - Standard Test Method for Air Permeance of Building Materials.
9. ASTM E2357 - Standard Test Method for Determining Air Leakage of Air Barrier Assemblies.

1.3 **SUBMITTALS**

1. Provide submittals in accordance with Section 01300 – Submittals.
2. Product Data: For all products specified herein, including product data, manufacturer's specifications, storage and handling requirements and recommendations, preparation and installation instructions, adjustment and alignment procedures.
3. Samples: For all products specified herein.
4. Mock Ups: N/A

1.4 **ALLOWANCES**

1. N/A

1.5 **DELIVERY & STORAGE**

1. Delivery to the job site shall be coordinated by the General Contractor.
2. Store in a secure and dry location until installation can proceed.
3. Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
4. Store materials in a secure and clean dry area in accordance with manufacturer's instructions.
5. Store at temperatures at or above 40°F (4°C), free from contact with cold or frozen surfaces.
6. Protect materials during handling and application to prevent damage or contamination.
7. Protect materials from direct sunlight or inclement weather prior to installation.

1.6 **SPECIAL PROTECTION**

1. Provide adequate protection of materials and work of this Section from damage by on site storage, weather, construction activities and other causes.

2. Protect the work of other sections from damage resulting from work of this section and protect the work of this section from damage resulting from work of other sections. Make good such damage to the satisfaction of the Consultant.
3. Contractor to exercise protective treatment and other precautions required through the construction period, to ensure that items listed will be without damage or deterioration other than normal weathering and wear.
4. If items are damaged as noted above, items are to be replaced / repaired at contractor's expense, not extra cost to the contract.
5. Cover air barrier membrane as soon as possible, to prevent damage due to construction activities, inclement weather and prolonged UV exposure.

1.7 WARRANTY

1. The work and materials of this section shall be warrantied in accordance with GC 12.3 of CCDC Document 2 and SC 3.44 of the City of Brantford's Supplementary Conditions, most current issuance, but for a period of **2 (two)** years from the date of Consultant's Certificate of Substantial Performance.

1.8 SEQUENCING & SCHEDULING

1. Ensure all work is installed and completed that will be concealed by this work.

1.9 PROJECT SITE CONDITIONS (ENVIRONMENTAL CONDITIONS)

1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
2. Product not intended for uses subject to abuse or permanent exposure to the elements.
3. Do not proceed with product application if rainfall is forecast or imminent within 12 hours.
4. Apply membrane when air and surface temperatures are 14°F (-10°C) and rising.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

1. W. R. MEADOWS®, INC., PO Box 338, Hampshire, Illinois 60140-0338. (800) 342-5976. (847) 683-4500. Fax (847) 683-4544. Website: www.wrmeadows.com, or approved alternative.

2.2 MATERIALS

2. Air Barrier - Air-Sheild SMP - Self-Adhesive Air Barrier Sheet Membrane: Fully adhered, sheet membrane, vapor permeable air and water resistive barrier, by W.R.Meadows, Sealtight, or approved alternative.
 1. Performance Based Specification: Air barrier membrane shall be water-based, that cures to form a tough, seamless, elastomeric membrane having the following characteristics:
 1. Air Leakage ASTM E2357: < 0.04 cfm/ft.² @ 75 Pa (1.57lb./ft.²).
 2. Air Permeability ASTM E2178: < 0.004 cfm/ft.² @ 75 Pa (1.57lb./ft.²).

3. Flame Spread and Smoke Development, ASTM E84: Class A.
4. Low Temperature Flexibility, AC38: Pass.
5. Nail Penetration, ASTM D1970: Pass.
6. Peel Adhesion, ASTM D3330: Pass.
7. Tensile Strength, ASTM D882: MD: 50 lbf/in (5.64 N/m).
XD: 30 lbf/in (3.39 N/m).
8. Water Vapor Permeance: ASTM E96 Method A: 41 perms.
ASTM E96 Method B: 54 perms.
9. Water Resistance, AATCC 127: Pass.

2.3 ACCESSORIES

1. Air Barrier Transition Membrane: Same as Air Barrier, Fully adhered, sheet membrane, vapor permeable air and water resistive barrier, by W.R.Meadows, Sealtight, or approved alternative.
2. Liquid Flashing: Fluid applied, single component, flashing membrane for rough openings and detailing.
 1. Air-Shield Liquid Flashing by W.R. Meadows, or approved alternative.
3. Thru-Wall Flashing Membranes:
 1. Through Wall Flashing (TWF) Membrane: Blueskin SA TWF by Bakor (Air Bloc 21 and Blueskin Primer or Aquatac Primer as per manufacturers installation instructions). Or approved alternative. Install over openings, below windows and openings, over all flashing locations, high – low wall locations from roof transitions and as noted and detailed on drawings. Flashing to be supported on a slope to the exterior with through wall flashing or sloped rigid insulation.
 2. Base Wall TWF Membrane: Blueskin SA TWF by Bakor (Air Bloc 21 and Blueskin Primer or Aquatac Primer as per manufacturers installation instructions). Or approved alternative. Base wall flashing to be supported on a slope to the exterior. Where there is no support, provide sloped rigid insulation angle or mortar wedge.
 1. Alternate:
 1. Air-Shield Thru-Wall Flashing by W.R. Meadows. Self-adhesive polymeric sheet membrane having a thickness of 40 mils (1 mm).
 2. Or other approved alternative.
4. Exterior Sheathing Raw Edge Treatment:
 1. MEL-PRIME™ VOC Compliant Solvent-Base Adhesive or Standard Solvent-Base Adhesive by W.R. Meadows. Or approved alternative.

5. Adhesive for Thru Wall Flashing Membrane:

1. MEL-PRIME VOC Compliant Solvent-Base Adhesive or Standard Solvent-Base Adhesive by W.R. Meadows. Or approved alternative.

PART 3 – EXECUTION

3.1 EXAMINATION

1. The Contractor shall, together with any and all other subcontractors involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
2. Contractor shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the subcontractor for correction prior to commencing the work of this section.
3. Commencement of the work of this section shall imply acceptance of all surfaces and conditions.
4. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

1. Protect adjacent surfaces not designated to receive air barrier.
2. Clean and prepare surfaces to receive air barrier membrane in accordance with manufacturer's instructions.
3. Do not apply membrane to surfaces unacceptable to manufacturer.
4. Prefill all joints, gaps and cracks that are greater than 1/4" (6 mm) with a generous bead of the liquid flashing material and allow to cure fully.
5. Exterior Sheathing Panels
 1. Install and fasten exterior sheathing panels according to the sheathing manufacturer's instructions.
 2. Install fasteners flush with the surface and into the framing.
 3. Remove any fasteners that are countersunk.
 4. Pre-treat any holes from the removal of the fasteners with liquid flashing prior to full wall membrane installation.
 5. Inspect all joints to ensure that all areas are clean, dry, smooth, and free from all bond-breaking contaminants.
 6. Remove and replace any damaged structural wall components.
6. Concrete Masonry Units or Concrete
 1. Prepare concrete surfaces so that they are clean, free of standing water, ice, snow, frost, dust, dirt, oil, curing compounds or any other foreign material that could prevent proper adhesion of the membrane.

2. Cure concrete a minimum of 14 days prior to full wall sheetmembrane installation.
3. Strike masonry joints flush.
4. Patch all holes and voids and smooth out any surface misalignments.
7. Ensure joints between dissimilar building materials are sealed with a strip of the self-adhesive membrane, 6" (150 mm) wide, centered over the joint.

3.3 **INSTALLATION**

1. Install in accordance with manufacturer's installation instructions and recommendations along with approved submittals.
2. Rough opening transition membrane:

Specifier Notes: There are two methods of window and door rough opening details recommended by W. R. MEADOWS for AIR-SHIED SMP. Select (1) or (2), based on project requirements.

1. Self-Adhesive Transition Membrane.
 1. Prefill inside corners of frame with liquid flashing material.
 2. Pre-cut the self-adhesive membrane for each area of the rough opening to ensure ease of handling.
 3. Apply membrane strips into each inside corner allowing for 3" (75 mm) coverage in all directions.
 4. Apply the first pre-cut strip at the base of the rough opening by removing the release paper and rolling firmly into place, ensuring that there is a minimum of 3" (75 mm) of membrane extending onto the wall and a minimum of 3" (75 mm) of membrane extending into the rough opening.
 5. Repeat this procedure for the vertical areas of the rough opening and the header portion of the opening.
 6. Overlap all cut edges of the membrane a minimum of 3" (75 mm).
 7. Seal all terminations with liquid flashing material.
2. Fluid Applied Transition Membrane using liquid flashing membrane
 1. Apply a coat of manufacturer-approved adhesive on the raw edges of exterior gypsum board.
 2. Apply a bead of liquid flashing in the rough opening starting at the top and continuing around the rough opening.
 3. Spread the material using a spreader tool or putty knife across the rough opening surface.
 4. Test the material thickness using a wet mil gauge to ensure that it has a thickness of 12 - 15 mils.

5. Apply a generous bead of liquid flashing material to the vertical surface around the rough opening and spread this material 4" - 6" (100 - 152 mm) onto the vertical surface with a spreader tool or putty knife.
 6. Test the thickness to ensure the material has a thickness of 12 - 15mils.
 7. Allow liquid flashing material to dry before installing any windows, doors, wall assembly, and full air barrier material.
3. Crack and Joint Treatment:
1. Treatment of joints or cracks larger than ¼" (6.35 mm) and less than ½" (12.7 mm).
 1. Prefill any joints or cracks with the liquid flashing material.
 2. Apply a generous bead of material over the joint.
 3. Press, and spread liquid flashing into the joint.
 4. Allow material to skin over prior to full application of liquid flashing into the rough opening.
 2. Treatment of joints or cracks larger than ½" (12.7 mm)
 1. Install backer rod into the joint to control depth of liquid flashing material.
 2. Apply a generous bead of material over and into the joint.
 3. Press, and spread liquid flashing into the joint.
 4. Smooth out using a spreader tool or putty knife
 5. Allow material to cure prior to full application of liquid flashing into the rough opening.
4. Penetrations:
1. Self-Adhesive Transition Membrane
 1. Pre-cut air barrier membrane to length to fully cover the penetration.
 2. Prepare AIR-SHIELD SMP membrane, or approved alternative, for application by cutting slits a minimum 2.5" (63.5 mm)] down the strip of membrane.
 3. Apply air barrier membrane around penetration and apply a bead of liquid flashing at termination point on the penetration.
 4. Apply fullsheet of air barrier membrane cut around the penetration and seal the cut edge with liquid flashing.
 2. Fluid Applied Liquid Flashing
 1. Pre-treat all penetrations with a bead of liquid flashing around the penetration ensuring full coverage of the gap.

2. Lay sheet of air barrier membrane over sheathing and around the penetration and roll press into place.
 3. Apply liquid flashing over penetration and onto the air barrier membrane 3" (75 mm) in all directions in a continuous installation.
5. Air Barrier Membrane:
1. Horizontal Installation:
 1. Snap chalk line for guidance.
 2. Pre-cut material to required length.
 3. Roll cut length of membrane with release paper outwards.
 4. Peel back the release paper starting at the corner, by approximately 6" (152.4 mm).
 5. Fold release paper back and using hand roller or stiff brush, lightly apply the exposed adhesive surface to the prepared substrate.
 6. Remove release paper only as membrane is being applied.
 7. Use hand roller or stiff brush, starting in the middle, to smooth out any air bubbles, releasing the air to each side.
 8. Overlap subsequent courses of membrane a minimum of 2.5" (63.5mm).
 9. Apply liquid flashing to all reverse lap terminations.
 10. Apply liquid flashing to any leading edge termination at the end of each working day.
 2. Vertical Installation:
 1. Snap chalk line for guidance.
 2. Pre-cut material to required length.
 3. Roll cut length of membrane with release paper outwards.
 4. Peel back the release paper starting at the corner by approximately 6" (152.4 mm).
 5. Fold release paper back and using hand roller or stiff brush, lightly apply the exposed adhesive surface to the prepared substrate.
 6. Remove release paper only as membrane is being applied.
 7. Use hand roller or stiff brush, starting in the middle, to smooth out any air bubbles, releasing the air to each side.
 8. Allow rest of rolled up material to drop down with release paper still attached and check for proper alignment.

9. Remove remaining release paper and use hand roller or stiffbrush across the entire adhered section.
 10. Smooth air bubbles with stiff brush/roller.
 11. Overlap subsequent courses of membrane a minimum of 2.5" (63.5 mm).
 12. Apply liquid flashing to all reverse lap terminations.
 13. Apply liquid flashing to any leading edge termination at the end of each working day.
6. Through Wall Flashing:
1. Prime surfaces to be covered in one working day with adhesive approved by membrane manufacturer.
 2. Remove release paper prior to application.
 3. Apply through wall flashing at based of masonry walls as indicated on drawings.
 4. Recess through wall flashing 1/2" (13 mm) from the face of the masonry.
 1. Apply a bead of pointing mastic if through wall flashing is not embedded into masonry.

3.4 **CLEAN-UP**

1. Repair finishes damaged during installation, restore finishes so no evidence remains of corrective work.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. Coordinate all locations shown on drawings and for all items noted herein.
 2. Supply and install rigid insulation at below grade insulation at perimeter walls; below interior floor slabs, at exterior entrance concrete slabs and sidewalks, underside door thresholds / entrance framing / curtain wall framing, around opening infill perimeters, cavity walls, clear storey walls and as indicated on drawings.
 3. Where thickness shown on drawings are not a standard thickness of the material, multiple layers of standard sizing insulation are to be used with staggered joint conditions adhered together.

1.2 REFERENCES & QUALIFICATIONS

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaw and the Ontario Ministry of Labour - all as currently amended. In case of conflict between Codes, the Ontario Building Code will govern.
2. Conform to CAN/ULC S701 Type 4.

1.3 SUBMITTALS

1. Provide submittals in accordance with Section 01300 – Submittals.
2. **Product Data:** For all products specified herein, including product data, manufacturer's specifications and installation instructions.
3. **Shop Drawings:**
 1. N/A
4. **Samples:**
 1. For all products specified herein.
5. **Mock Ups & Reviews:**
 1. Install one of each detail with all associated components for Consultant's review prior to installing any further of the same situations.
 2. Contractor is to notify the Consultant **seven (7) days** minimum prior to any on-site mock-up(s) and / or review(s).

1.4 DELIVERY & STORAGE

1. Arrange for early deliveries necessary for execution of work without delay and have materials on job well in advance of the time it is needed to avoid construction delays.

2. Deliver, store and handle materials to exclude foreign material and prevent damage, soiling or breakage.
3. Delivery to the job site shall be coordinated by the General Contractor.
4. Materials stored on site which need to be protected from weather shall be so protected.
5. Store in manufacturers unopened packing labelled with description of contents along with numbering or nomenclature used on shop drawings and bearing brand and manufacturer's name in a secure, in accordance with manufacturer's printed directions / instructions until installation can proceed. Inspect product upon receipt and report damaged material immediately to delivering carrier and note such damage on the carrier's freight bill of lading.
6. Storage of any material on or off the site is the responsibility of the contractor.

1.5 **SPECIAL PROTECTION**

1. Provide adequate protection of materials and work of this Section from damage by on site storage, weather, construction activities and other causes.
2. Protect the work of other sections from damage resulting from work of this section and protect the work of this section from damage resulting from work of other sections. Make good such damage to the satisfaction of the Consultant.
3. Contractor to exercise protective treatment and other precautions required through the construction period, to ensure that items listed will be without damage or deterioration other than normal weathering and wear.
4. If items are damaged / soiled as noted above, items are to be replaced / repaired at contractor's expense, not extra cost to the contract.
5. Consult with section of work soiled before cleaning to ensure methods used will not damage their work.
6. All patching and repair due to damage by other subcontractors, shall be performed under this section and paid for by the subcontractor responsible for the damage.

PART 2 - PRODUCTS

2.1 **MATERIALS**

1. INSULATION:
 1. Below Grade Foundation Locations: Ship lapped / square edged – buttered (with waterproofing membrane backup on exterior of foundations), extruded polystyrene rigid insulation to be "Styrofoam SM" with RSI 0.87 (R-5.0) minimum thermal resistance values per inch by Dupont, or approved alternative.
 2. Below Grade, Slab on Grade, Frost Slab, Insulated Door Slab on Grade, Door / Entrance Framing Locations: Square edge, extruded polystyrene rigid insulation to be "Styrofoam SM" with RSI 0.87 (R-5.0) minimum thermal resistance values per inch by Dupont, or approved alternative.
 3. Slab on Grade Locations For Vehicular Traffic: Square edge, extruded polystyrene rigid insulation to be "Styrofoam Brand Highload **100**" with RSI 0.87 (R-5.0) minimum thermal resistance values per inch by Dupont, or approved alternative.

4. Opening Infill Perimeters: square edged, ultra extruded polystyrene rigid insulation to be "Styrofoam Cavitymate Ultra" (Grey) with RSI 0.97 (R-5.6) or "Styrofoam SM" with RSI 0.87 (R-5.0) minimum thermal resistance values per inch by Dupont – less than 1 permeance, or approved alternative.
 5. Foam Insulation: Sprayed polyurethane foam to flame spread rating of less than 500, min. RSI 1.05 (R 6/1") at density of 32.8 kg/cu.m (2lb/cu.ft). Spray foam at voids and broken areas in the rigid insulation. Spray foam is for repair only.
2. ADHESIVE
1. Cavity wall insulation board perimeter buttered edges: "Air-Bloc 21" by Bakor (air barrier) , or approved alternative.

Note:
Over exterior sheathing, on framed substrate systems where there is mineral wool insulation filling the voids with a continuous vapour barrier sealed on the interior side of the framing members, the exterior rigid insulation is not to be sealed around perimeters when the contractor does not install Halo Exterra as specified for breathability.
 2. Adhesive for perimeter insulation below grade: to be CGSB 71-GP-24m equal to Bakor 230-3J, or approved alternative.

PART 3 - EXECUTION

3.1 EXAMINATION

1. Surfaces to receive rigid insulation shall be clean, free of grease and oil, and reasonably smooth with no projections.

3.2 INSTALLATION

1. GENERAL

1. Install in accordance with manufacturer's installation instructions.
2. Install insulation after building substrate materials are dry.
3. Install all materials using adhesive and fasteners.
4. Prime surfaces before using asphaltic type adhesives.
5. Ensure a uniform, continuous thermal barrier effect and thermal protection to building elements. Where insulation is to be provided under other Sections, co-ordinate the work such that the thermal barrier continuity is achieved.
6. Fit insulation closely around electrical boxes, plumbing and heating pipes and ducts, and other protrusions.
7. Cut and trim insulation neatly to fit spaces. Butt joints tightly, offset vertical joints. Use only insulation boards free from damaged or broken edges. Use longest possible lengths to reduce number of joints. Keep insulation minimum 3" (75 mm) from heat emitting devices such as recessed light fixtures, and a minimum 2" (50 mm) from sidewalls of CAN4-S604 Type "A" chimneys and CAN1-B149.1 and CAN1-B149.2 Type "B" and "L" vents.
8. In multiple layer applications offset both vertical and horizontal joints.

9. Spray in place insulation around all penetrations to fill any remaining voids.
10. Repair all open joints and damaged edges with foam spray insulation to fill voids.
2. BELOW GRADE FOUNDATION WALL LOCATIONS – WITH BELOW GRADE FLOOR LEVEL / BASEMENT
 1. Install rigid insulation using below grade adhesive dabbed on as required to hold insulation in place prior to installing waterproofing drainage bubble board over. Backfill gently at below grade perimeter foundation locations.
3. BELOW SLAB ON GRADE – INTERIOR NON-HEATED SLABS
 1. Install vertical (on inside of foundation) and continuous horizontal (underside slab on grade) minimum rigid insulation around building perimeters where more stringent insulation is not indicated / detailed on drawings.
4. BELOW GRADE INSULATION AT DOOR THRESHOLDS, ENTRANCE AND CURTAIN WALL FRAMING
 1. Install vertical rigid insulation below door thresholds between interior slab on grade and exterior frost slabs at every door threshold location and below entrance framing and curtain wall framing between interior slab on grade and exterior concrete curb.

3.3 INSPECTION

1. Do not enclose insulation until it has been inspected.

END OF SECTION

PART 1 – GENERAL

1.1 **SUMMARY**

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. Coordinate all locations shown on drawings and for all items located herein.
 2. Fire rated and non-fire rated partitions/walls, deck flute filler above all partitions/walls (fire rated or non-fire rated), opening infill shimming voids, interior wall partition cavities, exterior wall systems, sound insulation, fire stops, wall penetrations, attic insulation and all other locations as indicated on drawings.

1.2 **REFERENCES & QUALIFICATIONS**

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaw and the Ontario Ministry of Labour - all as currently amended except where indicated otherwise on drawings or specified herein. In case of conflict between Codes, the Ontario Building Code will govern.

1.3 **SUBMITTALS**

1. Provide submittals in accordance with Section 01300 – Submittals.
2. **Product Data:** For all products specified herein, including product data, manufacturer's specifications, storage and handling requirements and recommendations, preparation and installation instructions, adjustment and alignment procedures and any special procedures.
3. **Shop Drawings:**
 1. N/A
4. **Samples:**
 1. For all products specified herein.

1.4 **MAINTENANCE DATA & MATERIALS**

1. **Data:** N/A
2. **Materials:** N/A

1.5 **ALLOWANCES**

1. N/A

1.6 **DELIVERY & STORAGE**

1. Arrange for early deliveries necessary for execution of work without delay and have materials on job well in advance of the time it is needed to avoid construction delays.
2. Deliver, store and handle materials to exclude foreign material and prevent damage, soiling or breakage.

3. Delivery to the job site shall be coordinated by the General Contractor.
4. Materials stored on site which need to be protected from weather shall be so protected.
5. Store in manufacturers unopened packing labelled with description of contents along with numbering or nomenclature used on shop drawings and bearing brand and manufacturer's name in a secure, dry, free from dust and water location in accordance with manufacturer's printed directions / instructions until installation can proceed. Inspect product upon receipt and report damaged material immediately to delivering carrier and note such damage on the carrier's freight bill of lading.
6. Storage of any material on or off the site is the responsibility of the contractor.

1.7 **SPECIAL PROTECTION**

1. Provide adequate protection of materials and work of this Section from damage by on site storage, weather, construction activities and other causes.
2. Protect the work of other sections from damage resulting from work of this section and protect the work of this section from damage resulting from work of other sections. Make good such damage to the satisfaction of the Consultant.
3. Contractor to exercise protective treatment and other precautions required through the construction period, to ensure that items listed will be without damage or deterioration other than normal weathering and wear.
4. If items are damaged / soiled as noted above, items are to be replaced / repaired at contractor's expense, not extra cost to the contract.
5. Consult with section of work soiled before cleaning to ensure methods used will not damage their work.
6. All patching and repair due to damage by other subcontractors, shall be performed under this section and paid for by the subcontractor responsible for the damage.

1.8 **SEQUENCING & SCHEDULING**

1. Ensure all work is installed and completed that will be concealed by this work.
2. The Contractor shall cooperate in the coordination and scheduling of the product to avoid delays in job progress.

PART 2 - PRODUCTS

2.1 **MATERIALS**

1. INSULATION
 1. Thermal – C.I. (Continuous Insulation) - Above Grade Cavity Wall Locations
Rockwool Comfortboard 110 semi-rigid stone wool / mineral fibre insulation with 'R' value of 4.2 per inch, or approved alternative, to be installed with manufacturer recommended fasteners and fastening pattern. Thickness as shown on wall types or otherwise indicated on drawings.

2. Thermal – Stud Cavity Wall Locations:
Rockwool ComfortBatt semi-rigid stone wool / mineral fibre batt insulation with flexible edge, or approved alternative. Thickness is to fill wall cavity solid unless specified / shown otherwise on wall types and details.

Typical thicknesses of 64mm metal stud – R-10, 89mm wood stud – R14, 92mm metal stud – R14, 140mm wood stud – R22, 152mm metal stud – R22.5; coordinate other sizings with manufactures product data.
(Take into account wall cavity thickness for different R-Value)
3. Blown in Loose:
Rockwool Granulate / Owens Corning Thermafiber Insul-Fill mineral fibre insulation, or approved alternative, to be installed at all attic blown in insulation locations.

2.2 **ACCESSORIES**

1. Staples: 13mm (1/2") minimum leg.
2. Fasteners: All fasteners to manufacturers products, recommendations and installation instructions along with fastening patterns to be followed. These are in addition to any brick tie holders or other strapping / furring applied directly to the faces.

PART 3 - EXECUTION

3.1 **INSTALLATION**

1. Install insulation to maintain continuity of thermal protection to building elements and spaces. Insulation to be friction fit between framing members.
2. Fit insulation closely around electrical boxes, pipes, ducts, frames and other objects in or passing through insulation.
3. Do not compress insulation to fit into spaces unless requested by firestopping details.
4. Do not install insulation in any part of the building where protection against inclement weather has not yet been provided and where the insulation could thereby be wet or damaged.
5. Keep insulation a min. 75mm (3") from heat emitting devices such as recessed light fixtures for heat exposure and air space unless approved by the manufacturer.
6. Provide and install supports as required to keep insulation in place at soffits with floor above and around ducts in attic space.

3.2 **LOOSE FIBRE INSULATION**

1. Pack loose mineral wool insulation in crevices around lintels, frames, beams, around ducts at holes and other places where shown or required to minimize air infiltration.
2. Pack loose mineral wool into voids around mechanical and electrical pipes and ducts where they pass through non-fire rated wall, floors and ceilings.

3.3 **FIRE RATED MINERAL WOOL INSULATION**

1. Supply and install mineral wool at fire separations and where indicated on drawings.

2. Fill all deck flute cavities / metal deflection track voids above fire rated partition walls solid with mineral wool insulation between rooms, fire rated sealant / caulking to be installed over insulation to seal the cavities. Coordinate with typical firestopping / soundproofing details.
3. Refer to Section 07270 Firestopping and Smoke Seals for mineral wool work by that Section.

3.5 BATT INSULATION

1. Install mineral wool batt insulation at exterior or air/vapour barrier walls, ceiling spaces, between floor joists at perimeter wall locations and all other locations shown on drawings.
2. Place batts in close contact with vapour barrier or air/vapour barrier facing the interior.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. Coordinate all locations shown on drawings and for all items located herein.

1.2 REFERENCES & QUALIFICATIONS

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaw and the Ontario Ministry of Labour, Fire Marshal requirements - all as currently amended.
2. Applicator shall be licensed by the manufacturer of fireproofing materials with minimum three years documented experience for installing firestopping and smoke seal systems.
3. Product manufactured under ULC Follow-up Program. Each container or package shall bear ULC label or listing mark.
4. CAN4-S114-M85, 'Standard Method of Test for Determination of Non-Combustibility in Building Materials'.
5. CAN4-S115-M85, 'Standard Method of Fire Tests of Firestop Systems'.
6. ASTM E-814, 'Standard Method of fire Tests of Through-Penetration Firestops'

1.3 SUBMITTALS

1. Provide submittals in accordance with Section 01300 – Submittals.
2. **Product Data:** For all products specified herein, including product data, manufacturer's specifications, installation instructions and prefabricated devices.
3. **Shop drawings:** For fabrication shall be stamped by a Professional Engineer registered in the Province of Ontario, show all locations required. Show proposed material, reinforcement, anchorage, fastenings and method of installation. Construction details should accurately reflect actual job conditions, including actual wall types and roof deck types. Engineering Judgement Firestop Details to be submitted for all locations and styles of firestopping.
4. **Samples:** For all products specified herein.
5. **Mock Ups:** 3m length for review prior to installation of each actual firestop material proposed for the project.
6. Submit manufacturer's certification that materials meet or exceed specified requirements.

1.4 MAINTENANCE DATA & MATERIALS

1. **Data:** Provide maintenance data in Operation and Maintenance Manual.
2. **Materials:** N/A

1.5 ALLOWANCES

1. Allow for 3 lineal meters of additional firestopping as additional work not indicated on drawings or specifications. Locations as per later designation by Consultant. Provide credit at the end of the project if not used.

1.6 DELIVERY & STORAGE

1. Delivery to the job site shall be coordinated by the General Contractor.
2. Store in manufacturers unopened packing in a secure, dry and warm, with adequate ventilation, free from dust and water location in accordance with manufacturer's printed directions until installation can proceed.
3. All items to be packaged and labelled with description of contents along with numbering or nomenclature used on shop drawings.
4. Handle materials carefully to prevent damage.

1.7 SPECIAL PROTECTION

1. Provide adequate protection of materials and work of this Section from damage by on site storage, weather, construction activities and other causes.
2. Protect the work of other sections from damage resulting from work of this section and protect the work of this section from damage resulting from work of other sections. Make good such damage to the satisfaction of the Consultant.
3. Contractor to exercise protective treatment and other precautions required through the construction period, to ensure that items listed will be without damage or deterioration other than normal weathering and wear.
4. If items are damaged / soiled as noted above, items are to be replaced / repaired at contractor's expense, not extra cost to the contract.
5. Consult with section of work soiled before cleaning to ensure methods used will not damage their work.
6. All patching and repair due to damage by other subcontractors, shall be performed under this section and paid for by the subcontractor responsible for the damage.

1.8 WARRANTY

1. The work and materials of this section shall be warrantied in accordance with GC 12.3 of CCDC Document 2 and SC 3.44 of the City of Brantford's Supplementary Conditions, most current issuance

1.9 SEQUENCING & SCHEDULING

1. Sequence work to permit installation of firestopping and smoke seal materials to be installed after adjacent work is complete and before closure of spaces.
2. Ensure all work is installed and completed that will be concealed by this work.

1.10 PROJECT SITE CONDITIONS (ENVIRONMENTAL CONDITIONS)

1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.11 MUNICIPAL AUTHORITY APPROVAL

1. Discuss firestopping and smoke seal requirements with municipal building inspector to obtain their approval prior to installation. Determine which products and/or procedures will be required to obtain final approval.
2. Submit in writing, prior to commencing installation, full detailed descriptions of materials and methods to be employed for firestopping work to achieve full final approval of authorities having jurisdiction.

PART 2 - PRODUCTS

2.1 MATERIALS

1. Firestopping and Smoke Seal Systems: Products capable of maintaining an effective barrier against flame, smoke and gases in compliance with requirements of CAN4-S115-M85, and not to exceed opening sizes for which they are intended.
 1. Approved Manufacturers: Hilti, or approved alternative.
 1. Products listed do not entail all available products and by no way regulate manufacturers engineered systems.
 2. Other manufacturers shall not be used unless approved in writing (5) days prior to tender closing.
 3. Colour to be **Red** for all fire rated / resistive products.
1. Mineral Wool Backing Insulation: ULC labelled, non-combustible, preformed, as per manufacturer recommendations and installation instructions.
 - Hilti CP 767 Speed Strips.
 - Hilti CP 777 Speed Plugs.
 - Hilti Mineral Wool Safing (4 PCF Density Min.).
 - Rockwool mineral wool products can be used if submitted and approved by the firestopping manufacturer judgement details.
 - Or approved alternative.
2. Firestopping Sealant: ULC labelled, single component silicone based as per manufacturer recommendations and installation instructions.
3. Firestopping Sealant: ULC labelled, single component acrylic / water-based as per manufacturer recommendations and installation instructions.
 - Hilti CP 606 Flexible Firestop Sealant (acrylic).
 - Or approved alternative.
4. Smoke and Acoustic Sealant (not for use in fire rated applications, 0 hours rated and non-rated separations only): ULC labelled, single component acrylic / water-based as per manufacturer recommendations and installation instructions.
 - Hilti CP 506 Smoke and Acoustic Sealant (acrylic).
 - Or approved alternative.

5. Spray-On Firestopping Sealant: ULC labelled, high performance single component, water-based, elastomeric acrylic firestop sealant.
 - Hilti CFS-SP WB Firestop Joint Spray.
 - Or approved alternative.
6. Firestopping system at openings around penetrations for pipes, ductwork, conduit and other mechanical and electrical items requiring sound and vibration control: elastomeric sealant type with mineral wool; do not use a cementitious or rigid seal at such location.
 - Hilti CP 606 Flexible Firestop Sealant.
 - Or approved alternative.
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.
11. Firestopping mortar is not acceptable.
12. Fire resistance rating of installed firestopping assembly not less than the fire resistance rating of surrounding floor and wall assembly as indicated on the drawings.

2.2 **ACCESSORIES**

1. Provide all the necessary accessories for the complete and proper installation of the firestop system(s) in accordance with the manufacturer's instructions and appropriate design criteria.

PART 3 - EXECUTION

3.1 **EXAMINATION**

1. Beginning of installation means acceptance of existing surfaces and substrate. If substrate preparation is the responsibility of another installer, notify Contractor and the Consultant of unsatisfactory preparation before proceeding. Do not proceed until unsatisfactory conditions are corrected.
2. Examine existing conditions to receive this work prior to submitting shop drawings.
3. Verify that openings are ready to receive the Work of this Section.
4. Confirm compatibility of surfaces to receive firestopping and smoke seal materials.

3.2 **PREPARATION**

1. Examine sizes and conditions of voids to be filled to establish correct thicknesses and installation of materials. Ensure that substrates and surfaces are dry and frost free.
2. Clean surfaces thoroughly prior to installation.
3. Prepare surfaces in contact with firestopping materials and smoke seals to manufacturer's instructions.

4. Maintain insulation around pipes and ducts penetrating fire separation.
5. Mask where necessary to avoid spillage and over coating onto adjoining surfaces; remove stains on adjacent surfaces.

3.3 INSTALLATION

1. Install in accordance with manufacturer's installation instructions and recommendations.
2. Install firestopping and smoke seal material and components in accordance with ULC certification.
3. Seal holes or voids made through penetrations, poke-through termination devices, and unpenetrated openings or joints to ensure continuity and integrity of fire separation are maintained. For vertical sections, sealant is required only on the top side of the mineral wool. It is required on both sides for horizontal sections except only one side on '0' hour rated walls.
4. Provide temporary forming as required and remove forming only after materials have gained sufficient strength and after initial curing.
5. Tool or trowel exposed surfaces to a neat finish.
6. Remove excess compound promptly as work progresses and upon completion.
7. Install firestopping with smoke seal sealant on both sides of all fire rated walls except for '0' hour rated walls where sealants is required continuously only one side of mineral wool backing insulation.
8. Fire and smoke stop / seal all areas as indicated on the life safety drawings showing fire separations and assemblies (including 0 hour and up), and at locations as follows:
 1. Generally, all locations required by the Ontario Building Code.
 2. Penetrations through all fire resistance rated wall, floor, ceiling and roof assemblies (except mechanical and electrical penetrations which will be fire stopped by the mechanical and electrical contractors).
 3. Supporting rated wall assemblies and rated exposure wall assemblies.
 4. Top and bottom of fire resistance rated partitions and walls.
 5. Control and sway joints in fire resistant rated masonry.
 6. Control joints.
 7. Openings and sleeves installed for future use through fire resistant rated assemblies.
 8. At gaps around structural members passing through a fire rated system.

3.4 INSPECTION

1. Notify the Consultant when ready for inspection and prior to concealing or enclosing firestopping and smoke seal materials and service penetration assemblies.

2. Arrange for final inspection of the work of this Section by firestopping manufacturer and municipal building inspector prior to concealing or enclosing work. Make corrections required.

3.5 CLEAN-UP

1. Remove excess materials and debris and clean adjacent surfaces immediately after application.
2. Remove temporary dams after initial set of firestopping and smoke seal materials.

3.6 CERTIFICATION

1. The manufacturer of the firestopping and smoke seal products shall inspect each application on site and certify in writing its fire rating.
2. Costs for manufacturer's site inspection of firestopping and smoke seals application and certification shall be included in this Contractor's Section 07270 base bid.

END OF SECTION

PART 1 – GENERAL

1.1 **SUMMARY**

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. Provide asphalt shingle roofing, including but not limited to following:
 1. Galvanized Drip edge (continuous at eave and rake)
 2. Eave protection (ice & water shield over entire roof surface)
 3. Valley flashings (roll roofing or metal)
 4. Shingles (Certaineed Landmark Pro, or approved alternative)
 5. Metal flashings

1.2 **REFERENCES & QUALIFICATIONS**

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaw and the Ontario Ministry of Labour - all as currently amended. In case of conflict between Codes, the Ontario Building Code will govern.
2. **Related Sections**
 1. Roof sheathing and wood blocking: Section 06100, Rough Carpentry
3. Perform work using skilled and experienced roofing tradespeople fully conversant with standards, methods and techniques required for installation of roofing system specified herein.
4. Conform to Canadian Roof Contractor's Association (CRCA) Specification Manual, as amended to date of this Specification, as applicable, except where indicated or specified otherwise.
5. **References**

CAN/CGSB-19.13-M87	Sealing Compound, One-Component, Elastomeric, Chemical Curing
CAN/CGSB-37.4-M89	Fibrated, Cutback Asphalt, Lap Cement for Asphalt Roofing
CAN/CGSB-37.5-M89	Cutback Asphalt Plastic Cement
CAN/CGSB 51.32-M77	Sheathing, Membrane, Breather Type
CAN/CGSB 51.33-M89	Vapour Barrier Sheet, Excluding Polyethylene, for Use in Building construction
CAN/CGSB-93.1-M85	Sheet, Aluminum Alloy, Prefinished, Residential
CSA A123.1/A123.5-98	Asphalt Shingles Made From Organic Felt and Surfaced with Mineral Granules/ Asphalt shingles Made From Glass Felt and Surfaced with Mineral Granules
CSA A123.2-M1979(R2001)	Asphalt Coated Roofing Sheets
CSA A123.3-98	Asphalt Saturated Organic Roofing Felt
CAN3-A123.51-M85(R2001)	Asphalt Shingle Application on Roof Slopes 1:3 and Steeper

CAN3-A123.52-M85(R2001)	Asphalt Shingle Application on Roof Slopes 1:6 to Less than 1:3
CSA B111-1974(R1998)	Wire Nails, Spikes and Staples
CAN/ULC-S107-M87(R2001)	Standard Methods of Fire Tests of Roof Coverings
CRCA	Canadian Roofing Contractors Association

1.3 **SUBMITTALS**

1. Provide submittals in accordance with Section 01300 – Submittals.
2. Shop Drawings: Shop drawing submissions shall indicate method of installation, layout of each layer, fastening and flashings at edges, flashing of protrusions and penetrations. Shop drawings shall be reviewed and signed by manufacturer's representative.
3. Samples: Submit duplicate sample of full size asphalt shingles for approval of colour and type of shingle.

1.4 **MAINTENANCE DATA & MATERIALS**

1. Data:
 1. Supply all necessary maintenance data and repair instructions for binding into maintenance manuals described in Section 01300, Administrative Requirements.
 2. Bind into each maintenance manual name, address and phone number of nearest manufacturer's representative.
2. Materials: Turn over to Owner one full bundle of shingles for building upon completion and deliver where directed.

1.5 **DELIVERY & STORAGE**

1. Deliver materials to Site, protected, with manufacturer's seals and labels intact. Unload and place in temporary storage in manner to prevent damage.
2. Keep roofing felts dry, stored in rolls standing on end, selvage edge up, elevated from contact with moisture, at temperatures not less than 5 deg C (41 deg F) or more than 49 deg C (120 deg F). Handle rolls with care to avoid crushing, puncturing or other damage.
3. Store shingles on raised platform not stacked higher than 1.2 m (4') and protected by tarpaulin or plastic sheet. Allow for air circulation.
4. Protect sheet metal materials from bending and scratching.

1.6 **WARRANTY**

1. Warrant work of this Section against defects and deficiencies for a period of 15 years in accordance with General Conditions of the Contract. Promptly correct to satisfaction of the Consultant and at no expense to Owner, any defects or deficiencies which become apparent within warranty period.

PART 2 – PRODUCTS

1. Materials
 1. General: Ensure materials are compatible.
 2. Asphalt Shingles: Certaineed Landmark Pro, or approved alternative. Colour to be approved by the Owner prior to procurement. Submit samples for the Consultant and Owner's approval.
 3. Eaves Protection: Self-adhesive, self-sealing composite sheet membrane composed of high-density, cross laminated polyethylene and rubberized asphalt. Ice and Water Protection by IKO Industries Ltd. ArmourGard, or approved equal.
 4. Roll Roofing: CSA A123.2, Type S for smooth surface, and Type M for mineral surface. Colour selected by the Owner from manufacturer's standard range to match colour of shingles.
 5. Sheathing Paper: CAN/CGSB 51.32-M; asphalt saturated.
 6. Roofing Felts: CSA A123.3, No. 15, organic felt, asphalt saturated.
 7. Plastic Cement: CAN/CGSB 37.5-M.
 8. Lap Cement: CAN/CGSB 37.4-M.
 9. Roofing Nails: CSA B111, 10 to 12 gauge galvanized steel nails, sufficient length to penetrate deck minimum 12 mm (2").
 10. Sheet Metal: Prefinished aluminum alloy, postforming and non-postforming sheet finish coated 1 side, 0.60 mm (0.0235") min. base sheet thickness, CAN/CSA 93.1 by Alcan Building Products, Reynolds Aluminum Co. of Canada, or approved alternative. Colour and finish to be selected from manufacturers standard range.
 11. Drip Edge: Continuous preformed galvanized steel.
 12. Sealant: 1 component, chemical curing, CAN/CGSB-19.13-M, Class M_2_25_B_N.

PART 3 – EXECUTION

3.1 EXAMINATION

1. Report any defects or irregularities in roof deck detrimental to roof application. Do not proceed until corrected.
2. Ensure openings, walls and projections through deck are completed and affixed and reglets and nailing strips are in place prior to installation.
3. Ensure that deck substrate which are scheduled to receive roof system are smooth, dry, clean and free of sharp projections.

3.2 PREPARATION

1. Do no roofing during rain, fog, sleet or snow, or upon surfaces covered with dust, water, dew, ice, frost, snow and similar conditions.
2. Sweep roof surfaces clean, remove debris, water, dew, frost, snow, ice and foreign

materials (oil/grease) which could impair work.

3. No salt or calcium shall be used to remove ice or snow.

3.3 INSTALLATION

1. General

1. Install asphalt shingles on roof slopes 1:3 and steeper in accordance with CAN3-A123.51-M and CRCA Specification SH-1.
2. Drip edge: Install drip edge along eaves directly to deck and at all rakes over underlayment, overhanging 13 mm (2") with minimum 50 mm (2") flange extending onto roof decking. Nail to deck at 400 mm (16") o.c. maximum.
3. Eave Protection: Install eaves protection from edge of roof extending onto roof to a line not less than 300 mm (12") with inner face of exterior wall. Lap ends a minimum of 150 mm (6"). When more than 1 width required, overlap second course minimum 100 mm (4") over first course.
4. Underlayment: Lay 1 ply roofing felt underlayment horizontally over entire roof deck overlapping eave protection by 100 mm (4"). Nail sufficiently to hold in place until shingles are applied. Overlap succeeding course minimum 50 mm (2") and 100 mm (4") at end lap except at hips and ridges where end lap shall be 150 mm (6").
5. Flashings at Valleys: Provide 600 mm (24") wide sheet metal flashing centred down valleys.
 1. Lay 450 mm (18") wide strip of mineral surface roll roofing with mineral surface face down in centre of valley, from eave to top of ridge. Press sheet firmly in place and nail 25 mm (1") from exterior edges, using only enough nail to hold it in place. Cut bottom edge flush to eaves of roof. Apply 100 mm (4") wide strip of plastic cement to both edges. If joints are required, overlap upper section 300 mm (12") over lower section and cement with cement. Centre 930 mm (36-3/4") wide strip of mineral surface roll roofing, surface side up on top of previous strip. Press firmly in cement and nail in same manner.

6. Shingles Application

1. Before applying shingles, snap 2 chalk lines full length of valley, 100 mm (4") from centre at ridge and opening 10 mm/m (1/8"/ft) approaching eaves to maximum of 200 mm (8").
2. Lay shingles down to edge of chalk lines and cut to fit. Cut off top corner of each end shingle at an angle, to prevent water from penetrating between roofing courses. Cement shingles at chalk lines with 75 mm (3") width of plastic cement to seal and nail down.
3. Install asphalt shingle starter course granule side up, facing tabs up roof slope, overhanging eave edge 6 mm (1/4") to provide drip; nail along bottom edge 300 mm (12") oc.
4. Starting at edge of rake, apply full shingles across width of roof, overhanging drip edge 6 mm (1/4"). Moderately butt shingles together. Stagger joints one half tab in succeeding courses to permit vertical alignment. Continue this operation commencing every 5th course with full shingle.
5. Use 4 nails per shingle & install per manufacturers printed directions. Do not nail

into or above factory applied adhesive strip. Drive nails straight and flush. **Do not use staples.**

7. Flashings

1. Install step flashings from specified sheet metal on (mechanical), (electrical), (structural work) passing through roof or located on roof and make them watertight.
2. Supply each piece of metal flashing with minimum 50 mm (2") side lap, of size to extend 100 mm (4") up vertical surfaces and 50 mm (2") onto roof deck.
3. At soil or vent stacks location through roof, use smooth surface roll roofing cut to fit over pipe and extend 100 mm (4") below, 200 mm (8") above and 150 mm (6") to each side of pipe, or pre-fabricated metal flange to flash before shingles are laid. Slip flange over pipe and lay flat on roof. Form collar around pipe using plastic cement and work in to obtain good adhesion. Continue laying shingles and cement in all areas that overlap flange.

8. Lock joint and seal flashing seams. Wedge and seal flashings into masonry joints or reglets.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. **Work furnished and included:** All labour and materials necessary to fabricate and install the roof system specified in accordance with this performance specification and manufacturers installation instructions including:
 1. Ice and Water Underlayment membrane.
 2. Exterior pre-finished painted metal roofing sheet.
 3. Accessories associated with a complete system including but not limited clips, flashings, fascia, closures, snow fence / guards, ice deflectors including supports, gutters, down spouts and sealants.
 4. All flashings, flashing materials, or other sheet metal work directly associated with the performance of the Metal Roofing System.
 5. All mechanical and electrical or other consultant penetration seals including any rubber boots with aluminum or stainless steel collars, risers, etc.
 2. **Related work not included:**
 1. Framing members and roof sheathing and other elements required to support the Metal Roofing System.

1.2 REFERENCES & QUALIFICATIONS

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaw and the Ontario Ministry of Labour - all as currently amended.
2. **Certificates:**
 1. N/a.
3. **Qualifications:**
 1. Installation shall be only by the specified manufacturer or an authorized representative dealer for the region. Provide qualification document from Manufacturer of approval.
 2. Manufacturer and applicator of the Metal Roofing System shall demonstrate at least five years' experience in fabrication and installation of Architectural Metal Roofing projects similar in scope.
 1. **Manufacturer and/or approved applicator must have the singlesource facility to provide:**
 1. Total design of the Metal Roofing System.
 2. Technical literature on tested Metal Roofing Systems.
 3. Engineering and drafting facilities.
 4. Fabrication of Metal Roofing System and associated components.
 5. Bonding Assurance (if required).
 6. Technical representatives.

7. Field installation by approved certified erectors.
8. A warranty as specified under Section 01300.
9. All fabrication / installation drawings must bear the stamp of a professional engineer registered in the province of Ontario.

4. References: (All as currently amended)

1. CAN/CSA Standard S136 latest edition for the Design of Cold Formed Steel Structural Members.
2. Canadian Sheet Steel Building Institute Standards 10M and 20M.
3. National Building Code of Canada (latest edition).
4. Ontario Building Code 2012.
5. Deflection of the roof system is not to exceed 1/240th of the span for the specified live loading.
6. Design roof system to accommodate thermal movement of the roof sheet caused by ambient temperature range of -30° to +30°.
7. Design roof system to withstand dead loads, snow loads, snow build-up and rain load. Design fastener systems to withstand wind uplift on the roof and sliding forces induced by environmental loads.

1.3 SUBMITTALS

1. Provide submittals in accordance with Section 01300 – Submittals.
2. Product Data: For all products specified herein, including product data, manufacturer's specifications, storage and handling requirements and recommendations, preparation and installation instructions, adjustment and alignment procedures and any special procedures.
3. Shop Drawings:
 1. Shop drawings shall be submitted by the specified manufacturer only.
 2. Before shop drawings and fabrication is started, take critical measurements at the site to facilitate installation and fitting of work. Where field measurements cannot be made without delaying the work, guarantee dimensions and proceed with fabrication of wall panel assemblies corresponding to the established dimensions.
 3. Shop drawings shall be of best quality craftsmanship, incorporating specific job details not generic details.
 4. Shop drawings that are submitted are to be in the units of the tendered drawings, metric is mandatory with imperial as additional alternate is acceptable.
 5. Show all locations required, arrangement of roof sheet, construction methods and details, joints, termination details, types and locations of supports, fasteners, snow fence and ice deflectors, flashings, gutters, down spouts (rain water leaders), all metal components related to the roof system, etc. Indicate layout, size and description of components, base material, surface finish inside and out, attachment devices, etc. and all other pertinent data and information

6. Fabrication drawings shall be stamped by a Professional Structural Engineer registered in the Province of Ontario.
7. No fabrication and or installation shall commence until all shop drawings have been approved
4. Samples:
 1. For all products specified herein.
 2. Colours and textures: as selected by Consultant to be accompanied with a hardcopy colour chart and physical sample for selection.
5. Mock Ups & Reviews:
 1. N/A

1.4 MAINTENANCE DATA & MATERIALS

1. Data: Provide maintenance data in Operation and Maintenance Manual.
2. Materials: N/A

1.5 ALLOWANCES

1. N/A

1.6 DELIVERY & STORAGE

1. Arrange for early deliveries necessary for execution of work without delay and have materials on job well in advance of the time it is needed to avoid construction delays.
2. Deliver, store and handle materials to exclude foreign material and prevent damage, soiling or breakage.
3. Delivery to the job site shall be coordinated by the General Contractor.
4. Materials stored on site which need to be protected from weather shall be so protected.
5. Store in manufacturers unopened packing labelled with description of contents along with numbering or nomenclature used on shop drawings and bearing brand and manufacturer's name in a secure, dry, free from dust and water location in accordance with manufacturer's printed directions / instructions until installation can proceed. Inspect product upon receipt and report damaged material immediately to delivering carrier and note such damage on the carrier's freight bill of lading.
6. Each item is to be individually wrapped in protective crating or packaging complete with all fittings and accessories as required.
7. Storage of any material on or off the site is the responsibility of the contractor.
8. Protect prefinished steel during fabrication, transportation, site storage and erection, in accordance with CSSBI Standards.

1.7 **SPECIAL PROTECTION**

1. Provide adequate protection of materials and work of this Section from damage by on site storage, weather, construction activities and other causes.
2. Protect the work of other sections from damage resulting from work of this section and protect the work of this section from damage resulting from work of other sections. Make good such damage to the satisfaction of the Consultant.
3. Contractor to exercise protective treatment and other precautions required through the construction period, to ensure that items listed will be without damage or deterioration other than normal weathering and wear.
4. If items are damaged / soiled as noted above, items are to be replaced / repaired at contractor's expense, not extra cost to the contract.
5. Consult with section of work soiled before cleaning to ensure methods used will not damage their work.
6. All patching and repair due to damage by other subcontractors, shall be performed under this section and paid for by the subcontractor responsible for the damage.

1.8 **WARRANTY**

1. The work and materials of this section shall be warrantied in accordance with GC 12.3 of CCDC Document 2 and SC 3.44 of the City of Brantford's Supplementary Conditions, most current issuance, upon completion of the Metal Roofing System installation, an industry standard warranty shall be provided to the General Contractor for a period of **two (2) years** in accordance with C.R.C.A. recommendations covering material, roof leaks and installation workmanship.
2. All material warranty shall be subject to the terms and conditions set forth by the material coil producer.

1.9 **SEQUENCING & SCHEDULING**

1. Ensure all work is installed and completed that will be concealed by this work.
2. The Contractor shall cooperate in the coordination and scheduling of the product to avoid delays in job progress.

1.10 **PROJECT SITE CONDITIONS (ENVIRONMENTAL CONDITIONS)**

1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 - PRODUCTS

2.1 **MANUFACTURERS:**

1. Approved Manufacturers:
 1. Vicwest.
 2. Agway
 3. Or approved alternate.

1. Colours and textures:

1. Colour selections to be from the manufacturer's full list of standard colours. Contractor to confirm colour selection with Owner prior to procurement.

2.2 MATERIALS

1. Underlayment: W.R. Grace. Ice and Water Shield Ultra membrane.

W.R. Grace. Ice and Water Shield HT membrane – metal roofing regular.
Or approved alternative.

2. Prefinished Roof Sheet, exposed to exterior

1. Profile: Vicwest Supervic SV30 or Agway Century Rib Exposed Fastener Roofing profile. Or approved alternative.

1. Colour: Deep Grey 55174 or Deep Grey QC 28314

2. Panel: Z275 galvanized sheet steel conforming to ASTM A653M Grade 230. having a nominal core thickness 0.65mm (0.026"), 24 gauge.

3. Roof Fasteners: As specified by manufacturer, to resist wind uplift and sliding snow forces.

Note - contractor to confirm final colour with Consultant and Client based on match to existing structures prior to procurement.

2.4 ACCESSORIES

1. Flashings: In accordance with this section. Formed from same material, thickness and finish as the Metal Roofing Sheet. Flashings to be custom fabricated to suit architectural details where required.

2. Starter Strips: As recommended by manufacturer with butyl tape. Install at all valley conditions

3. Closures: Formed from same material, thickness and finish as the Metal Roofing Sheet. Metal and foam closures to suit profiles selected, to manufacturer's recommendations. Metal closures to be used over foam closures where applicable.

4. Ridge Vent (Vented and Non-Vented): Formed from same material, thickness and finish as the Metal Roofing Sheet. To be provided continuous at all ridges. Notched 'z' bar closures at all ridge systems installed under ridge vents.

5. Valleys: 'W' profile, formed from same material, thickness and finish as the Metal Roofing Sheet. To be provided continuous at all valleys.

3. Sealants: As recommended by the Metal Roofing System manufacturer.

5. Snow Fence: Continuous pipe style snow fence (minimum 2 pipe rows) with mounts placed on every standing seam that the snow guard passes over and Ice deflectors / ice flags between every standing seam mount. Install at all roof eave base conditions, less locations will be shown on the drawings. All work shall be provided under this section and designed by a professional engineer, registered in the province of Ontario.

2.5 FABRICATION

1. Fabricate Metal Roofing System components to comply with dimensions, profiles, gauges and details as shown on the approved shop drawings, including all companion flashings.
2. Fabricate all components of the system in the factory, ready for field installation.
3. Provide roof sheet and all accessories in longest practicable length to minimize field lapping.

PART 3 - EXECUTION

3.1 EXAMINATION

1. The Trade shall, together with any and all other Trades involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
2. Trades shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the Trade for correction prior to commencing the work of this section.
3. Commencement of the work of this section shall imply acceptance of all surfaces and conditions.
4. Proceed with installation only after unsatisfactory conditions have been corrected.
5. Verify that the opening sizes and tolerances are acceptable.

3.2 PREPARATION

1. Clean surfaces thoroughly prior to installation.

3.2 INSTALLATION

1. Install in accordance with manufacturer's installation instructions and recommendations along with approved submittals.
2. Coordinate with mechanical and electrical for any final connections.
3. Dissimilar metals in contact or metals and masonry or concrete, when necessary to prevent corrosion, to be insulated one from another by methods and materials required for such results, as approved by the Consultant.
4. Ensure wood structure and deck installation is complete before starting roof work.

5. Roof Materials:

1. Air/Vapour Barrier: Install membrane Air/Vapour Barrier according to the manufacturer's recommendations. Ensure all joints are properly lapped min. 100 mm (4"), sealed and tied in with roof and wall air/vapour barriers to ensure airtight construction. Provide a continuous seal around all openings in the insulated metal roof system.
2. Panel Clips: Attach Metal Roofing System Support Clips as shown on approved shop drawings, to suit the substrate, and to resist wind uplift forces.

6. Metal Roofing Sheet Installation:

1. Install exterior metal roofing sheets with panel clips, in strict accordance with manufacturer's proper construction procedure. Ensure metal roofing sheet 'T' standing seam is positively locked for full length of roof fascia, soffit, and proper sheet coverage is maintained. Field cut mitres where required and install a Knee-Cap Batten at the mitre.
2. Where indicated on approved shop drawings, secure the end-lap of metal roofing sheets in accordance with the manufacturers specifications and details to provide a weather-tight seal. Exposed fasteners to match colour of the roofsheet.
3. Install notched and formed closures in accordance with approved shop drawings. Seal against weather penetration, at changes in pitch, and at ridges and eaves, where required.
4. Install all companion flashings, vented soffit, gutters, snow fence and ice deflectors, including supports, ridge vents, ventilators, and down spouts as shown on approved shop drawings.
5. Oil canning of sheet steel will not be accepted. The system is to incorporate expansion and contraction at the top of the roofing system (underside of the ridge cap typical location) for the environmental conditions of the global location that the system is installed.

3.3 TOUCH-UP AND CLEANING

1. Clean in conformance with Division 1 General Requirements.
2. Clean exposed surfaces using methods acceptable to the manufacturer which will not damage finish.
3. Repair finishes damaged during installation, restore finishes so no evidence remains of corrective work. Repairs are to be done as directed by the manufacturer at no additional cost to Owner.
4. Remove excess materials, masking and debris and clean adjacent surfaces immediately after application.
5. Remove and replace work that cannot be satisfactorily repaired.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. Coordinate all locations shown on drawings and for all items located herein.
 2. The Work of this Section shall be comprised of the fabrication, supply and installation of pre-fabricated metal wall system as indicated on drawings and as specified herein. The specifications and drawings pertaining to this section's works are to portray the general design and particular building requirements. The Contractor will be responsible to ensure that the finished metal wall cladding system product meets or exceeds the general design requirements and finished usage of the building as specified herein.
 3. The Contractor in conjunction with the metal wall cladding system Manufacturer will be required to ensure that the metal wall cladding and their components are designed, engineered, adapted as required to satisfy the general design as indicated herein without significantly altering details, measurements, clearances, etc., while allowing for the proper installation of work of all other sections.
3. **Work Included:**
 1. Preformed Metal wall cladding, interior metal liner panels, caps, fascia, closures, flashings, vented and non-vented soffits, profiles, sealants and miscellaneous trim.
 2. All sub-girts (singular and bi-directional – metal or composite materials), Thermal Brackets (metal or composite materials), support framing back to structure, spacers, clips and fasteners and all other sub-framing requirements for a complete engineered system.
 3. Copper / stainless steel through wall flashings and other copper / stainless steel flashings where applicable in conjunction with these specified systems along with bituminous paint for separation of dissimilar metals.
 4. Sealants.

1.2 REFERENCES & QUALIFICATIONS

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaw and the Ontario Ministry of Labour, authorities having jurisdiction - all as currently amended.
2. **Certificates:**
 1. Product certificates signed by manufacturer certifying materials comply with the specified performance characteristics and criteria, and physical requirements.

3. Qualifications:

1. Manufacturing, installation, and design of the panel system shall be reviewed by a professional engineer who is legally qualified to practice in the jurisdiction where the project is located and who is experienced in providing engineering services of kind indicated. Letters of Assurance and Schedule SB and SC are required – engineering specific to the project specific profile(s) to be completed prior to project tender date and prior to the expiration of the alternate acceptance period.
2. Manufacturer Qualifications: Minimum of 10 years of experience in manufacturing exterior wall panels similar to those specified.
3. Installer Qualifications: Acceptable to manufacturer. Installation shall be only by the specified manufacturer's construction forces or an authorized / accredited representative dealer for the region. Provide qualification documents from Manufacturer of approval.

4. References: (All as currently amended)

1. CSA-S136 for the design of Cold Formed Steel Structural Members.
2. Canadian Sheet Steel Building Institute Standards 20M.
3. SMACNA manual, current edition.
4. Applicable publications by Canadian Sheet Steel Building Institute.

2. Design and Performance Requirements:

1. Appearance: Manufacturing, installation and sealing shall prevent excessive deformation of exposed surfaces. Exposed fasteners approved by the Consultant; exposed surfaces free of distortion, twist, waves and buckles.
2. Structural Loads: Provide exterior / interior wall cladding assemblies capable of withstanding the effects of load and stresses from dead loads, wind loads, snow loads and normal thermal movement without evidence of permanent defects of assemblies or components.
3. Wind Load: Resist positive and negative wind pressures expected in this geographical area with a maximum allowable deflection of 1/180 of span. Components shall not vibrate when subjected to the effects of wind.
4. Moisture Control: Prevent uncontrolled penetration of moisture, infiltration of water and snow into siding system. Provide means of draining space between insulation and exterior skin, in accordance with NRC Rain Screen Principles and drawing details.
5. Thermal Movement: Accommodate free and silent thermal movements from temperature changes for the project location of expansion and contraction of component parts without causing / preventing buckling, failure of joints and seals, opening of joints, undue stress on fasteners, overstressing of components and other detrimental effects.
6. Structural Movement: Accommodate movement between siding system and building structure caused by structural movement, without permanent distortion, racking of joints, breakage of seals or water penetration.

7. Design panel system to accommodate substructure tolerance of +0 to -1/8 inch: 10'.
8. Not Permitted: Vibration harmonics; wind whistles; noises caused by thermal movement; thermal movement transmitted to other building elements; loosening, weakening or fracturing of attachments or components of system.
9. Preformed metal panel system to withstand code imposed design loads.
10. Rainscreen performance in compliance with AAMA508-07

1.3 **SUBMITTALS**

1. Provide submittals in accordance with Section 01300 – Submittals.
2. Product Data: For all products specified herein, including product data, manufacturer's specifications, storage and handling requirements and recommendations, preparation and installation instructions.
3. Shop Drawings:
 1. Shop drawings shall be submitted by the specified manufacturer only.
 2. Before shop drawings and fabrication is started, take critical measurements at the site to facilitate installation and fitting of work. Where field measurements cannot be made without delaying the work, guarantee dimensions and proceed with fabrication of wall panel assemblies corresponding to the established dimensions.
 3. Shop drawings shall be of best quality craftsmanship, incorporating specific job details not generic details.
 4. Shop drawings that are submitted are to be in the units of the tendered drawings, metric is mandatory with imperial as additional alternate is acceptable.
 5. Colours as selected by Owner to be accompanied with a hardcopy colour chart for selection, all colour selections to be from the manufacturer's full list of standard colours or from the full list of RAL colours where custom colour is specified.
 6. Fabrication drawings shall be stamped by a Professional Structural Engineer registered in the Province of Ontario, show all locations required including plans, elevations, sections and details. The engineer is to provide actual sub-girt, hat channel, furring, thermal bracket sizing, thickness and spacing. Submit a comprehensive analysis of design loads, including dead loads, live loads, wind loads and thermal movement.
 7. Indicate dimensions, siding and soffit profiles, attachment methods, anchorage details for preformed insulated metal wall system, framed openings, accessories, reveals and control joints, schedule of wall elevations, trim and closure pieces, loadings, fasteners and related work.
 8. Indicate arrangement of prefinished metal cladding sheets including joints, types and location of supports, fasteners, and any special shapes.

9. Fully detail membrane air/vapour barrier, thermal barrier, insulation, corner details, flashings at top and bottom of walls, and all other components in the system.
10. Indicate detailed description of mechanical, electrical and other systems in work.
11. Describe requirements of other systems of components related to this work but provided by others. Obtain necessary information required to detail this work including methods of integration and securing.
4. Samples: Submit 200mm x 300mm (8" x 12") or larger colour sample of each prefinished metal panel. Submit interlocking panel assembly approximately 900mm x 900mm (3'-0" x 3'-0") in size of all fabricated materials forming a part of the metal wall system. Show weatherproof sealed exterior and interior joints.
5. Mock Ups: N/A

1.4 MAINTENANCE DATA & MATERIALS

1. Data: Provide maintenance data in Operation and Maintenance Manual.

1.5 ALLOWANCES

1. N/A

1.6 DELIVERY & STORAGE

1. Ordering: Comply with manufacturer's ordering instructions, and lead-time requirements to avoid construction delays.
2. Delivery to the job site shall be coordinated by the General Contractor.
3. Provide necessary crating or bundling for shipment of components to site including protection against weather.
4. Mark and identify parts of metal roofing before shipping.
5. Protect prefinished steel sheet during fabrication, transportation, site storage and installation in accordance with CSSBI Sheet Steel Fact #3, January 2017 – as currently amended.
6. Store materials in accordance with manufacturer's recommendations, flat at Site under protection to prevent staining from the ground or from collection of water on material, or both; and secure against wind damage. Provide air circulation around finished metal surfaces. Store insulation and adhesives in dry areas, heated as required to prevent damage to adhesives.
7. All items to be packaged and labelled with manufacturers original labels and description of contents along with numbering or nomenclature used on shop drawings. All materials to be in sealed containers where applicable. Each item is to be individually wrapped complete with all fittings and accessories as required.
8. Handle and protect galvanized materials from damage to zinc coating.
9. Handle materials carefully to prevent damage.

1.7 **SPECIAL PROTECTION**

1. Provide adequate protection of materials and work of this Section from damage by on site storage, weather, construction activities and other causes.
2. Protect the work of other sections from damage resulting from work of this section and protect the work of this section from damage resulting from work of other sections. Make good such damage to the satisfaction of the Consultant.
3. Contractor to exercise protective treatment and other precautions required through the construction period, to ensure that items listed will be without damage or deterioration other than normal weathering and wear.
4. If items are damaged / soiled as noted above, items are to be replaced / repaired at contractor's expense, not extra cost to the contract.
5. Consult with section of work soiled before cleaning to ensure methods used will not damage their work.
6. All patching and repair due to damage by other subcontractors, shall be performed under this section and paid for by the subcontractor responsible for the damage.

1.8 **WARRANTY**

1. The work and materials of this section shall be warrantied in accordance with GC 12.3 of CCDC Document 2 and SC 3.44 of the City of Brantford's Supplementary Conditions, most current issuance, but for a period of **five (5)** years from the date of Consultant's Certificate of Substantial Performance
2. The Contractor hereby warrants that the metal wall system enclosure will be water and weathertight, structurally sound and free from distortion; that the exterior finish will not craze, peel, corrode or discolour; that the exterior cladding will not develop excessive fading or non-uniformity of colour, and will be free from blemishes or distortion due to thermal movement of the wall or normal movements of the building structure; that the gaskets, tape and sealants will be free from deterioration from sunlight, weather or oxidation and from permanent deformation and free from leaks under load.

1.9 **SEQUENCING & SCHEDULING**

1. Ensure all work is installed and completed that will be concealed by this work.

1.10 **PROJECT SITE CONDITIONS (ENVIRONMENTAL CONDITIONS)**

1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 - PRODUCTS

2.1 **MANUFACTURERS**

1. Approved Manufacturers:
 1. Vicwest
 2. Agway

3. Or approved alternative.

2.2 **MATERIALS**

1. Pre-Painted Sheet Steel:

1. Base metal: hot dipped zinc coated (galvanized) sheet steel meeting requirements of ASTM A653.
2. Profile:
 1. Vertical Siding: Vicwest DR 36 or Agway Diamond Rib, min. 24-gauge, or approved alternative.
 - a. Colour: Stone Grey 56071 or Stone Grey QC 28305
 2. Vented Soffit: Vicwest or Agway ventilated steel soffits, or approved alternative.
 - a. Colour: Stone Grey 56071 or Stone Grey QC 28305
 3. Interior Metal Panel: Vicwest DR 36 or Agway Diamond Rib, min. 28-gauge, or approved alternative.
 - a. Colour: Bright White 56086 or Bright White QC 28783

Note - contractor to confirm final colour with Consultant and Owner based on match to existing structures prior to procurement.

2.3 **ACCESSORIES**

1. Sub-girts (single vertical, bi-directional (single vertical with single horizontal)), Hat Channels (single vertical, bi-directional (single vertical with single horizontal)), Clips, Spacers, Thermal Brackets: minimum 1.2mm / 18-gauge thick formed galvanized steel (to be verified by siding manufacturer to withstand all loading of the siding system); ASTM 446 Grade A, zinc coating designation Z275.
2. Through Wall Flashing (TWF) Membrane: Blueskin SA TWF by Bakor (Air Bloc 21 and Blueskin Primer or Aquatac Primer as per manufacturers installation instructions), or approved alternative. Install below window sills; and over all flashing locations, high – low wall locations from roof transitions. Flashing to be supported on a slope to the exterior with through wall flashing or sloped rigid insulation.
3. Base Wall TWF Membrane: Blueskin SA TWF by Bakor (Air Bloc 21 and Blueskin Primer or Aquatac Primer as per manufacturers installation instructions), or approved alternative. Base wall flashing to be supported on a slope to the exterior. Where there is no support, provide sloped rigid insulation angle.
4. Cavity Closures: 12 gauge (2.7mm / 0.105") 304 stainless steel with 2B finish cold rolled formed to suit continuous bent closure profile:
 - around all wall openings;
 - around all other misc. openings through exterior cavity wall
 - at expansion joints and control joints

Closure(s) to have minimum dimensions to meet or exceed cavity wall insulation thickness / depth on both flanges. Do not over exceed insulation and air space cavity dimensions as to block off drainage and air space, this is to remain free of infill to breathe and drain.

5. Compartment Control Joint (CCJ) / Firestop: 12 gauge (2.7mm / 0.105") 304 stainless steel, 2B finish cold rolled formed, complete with stainless steel reinforcing wire @ 400 o/c through slotted holes.
 1. Exterior wall locations. Install CCJ at:
 1. All exterior corners, 390mm from corner on both sides;
 2. All interior corners
 3. Maximum 20m horizontally on walls and wherever indicated on the drawings and reviewed shop drawings.
 1. Fastening Devices: Stainless or cadmium plated; colour match exposed fasteners with metal on which they occur.
6. Flashings, Trim and Closures: Pre-formed Flashings, Trim, Closures, Corner, 'J', and reveals as detailed and as recommended by manufacturer at all exposed locations. Use same sheet metal gauge as exterior skin. Material as exterior skin where exposed. Use galvanized sheet steel in concealed locations. Double back (safety / hemmed edge) at all exposed edges.
7. Bituminous Paint: Best grade, quick drying, non-staining alkali resistant asphalt utility enamel. To be applied to top horizontal and vertical surfaces of all structural steel hot dipped galvanized lintels for dissimilar metal separation.
8. Sealants:
 1. Concealed Locations: Tape or compound, non-skinning, non-drying, butyl rubber.
 2. Exposed Locations: Spectrem 1 by Tremco or approved alternative one part silicone sealant to CGSB 19.13-M87.
 3. Primer: As recommended by sealant manufacturer.
9. Aluminum Extrusions where required: ASTM B221, alloy 6063-T6 and/or 6061-T6.
10. Fastening Devices: Stainless or cadmium plated; colour match exposed fasteners with metal on which they occur.

2.2 **FABRICATION**

1. All material shall be factory made and not on site.
2. Unless otherwise indicated use minimum 22-gauge, (0.030" (0.76mm)) core thickness sheet metal, tension levelled.
3. Spacer of Girt System: galvanized steel girt anchor or clip system designed to meet performance requirements specified. Design system to minimize direct heat transfer; avoid direct metal to metal contact wherever possible.

4. Finished exposed surfaces shall be prepainted steel, smooth and plain.

PART 3 - EXECUTION

3.1 EXAMINATION

1. The Trade shall, together with any and all other Trades involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
2. Trades shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the Trade for correction prior to commencing the work of this section.
3. Commencement of the work of this section shall imply acceptance of all surfaces and conditions.
4. Proceed with installation only after unsatisfactory conditions have been corrected.
5. Verify that the opening sizes and tolerances are acceptable.

3.2 PREPARATION

1. Clean surfaces thoroughly prior to installation.
2. Provide secondary steel framing for support of metal siding and soffit system, where such framing is required but not provided by structural steel Section. Install secondary framing in accordance with applicable requirements of CAN3-S16. 1 and CAN3-S136.

3.1 INSTALLATION

1. Install in accordance with manufacturer's installation instructions and recommendations along with approved submittals and as detailed on drawings.
2. Coordinate with mechanical and electrical for any final connections.
3. Dissimilar metals in contact or metals and masonry or concrete, when necessary to prevent corrosion, to be insulated one from another by methods and materials required for such results, as approved by the Consultant.
4. Prior to installing sub-girts, hat channels, thermal clips, spacers to support work, insulation Contractor to install vapour barrier, air barrier, air/vapour barrier transition membranes along with all thru wall flashings. (by Sections 07211, and 04100)
5. Fasten sub girts, hat channels, thermal clips, spacers and suspended metalsoffit furring to supporting work. Provide additional framing at terminations, openings and penetrations.
6. Allow Rigid Insulation Contractor to install rigid insulation prior to installing exterior skin.
7. Install exterior wall and soffit skin with all joints accurately aligned and tightfitting.
8. Erect panels level and plumb, in proper alignment in relation to substructure framing and established lines.

9. Panel anchorage shall be structurally sound and per engineering recommendations.
10. Provide sealants, flashings, closures, covers and trim as indicated and as required to render work complete and finished in accordance with specified requirements. Install sealants in accordance with Section 07900, Sealants.
11. Coordinate installation of metal siding and soffit with all other Trade Contractors working in the surrounding area.
12. Leave metal siding and soffit systems in clean and neat condition.

3.3 CLEAN-UP

1. Clean in conformance with Division 1 General Requirements.
2. Clean exposed surfaces using methods acceptable to the manufacturer which will not damage finish.
3. Repair finishes damaged during installation, restore finishes so no evidence remains of corrective work.
4. Clean and touch up minor abrasions in finished with air-dried coating that matches color and gloss, and is compatible with, factory-applied finishcoating.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. Where metal flashing and trim are indicated on drawings.

1.2 REFERENCES & QUALIFICATIONS

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaw and the Ontario Ministry of Labour - all as currently amended.
2. References: (All as currently amended)
 1. ASTM A563/A563M-97 Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip process.
 2. ASTM A591/A591M-89 Specification for Steel Sheet, Electrolytic Zinc-Coated, for Light Coating Mass Applications.
 3. ASTM A606-96 Specification for Steel Sheet and Strip, Hot-Rolled and Cold-Rolled, High Strength, Low Alloy, with Improved Atmospheric Corrosion Resistance.
 4. ASTM A792/A792M-96 Specification for Steel Sheet, Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
 5. ASTM D523-89 (1991)el Specular Gloss.
 6. ASTM D822-96 Recommended Practice for Conducting Tests on Paint and Related Coatings and Materials Using Filtered Open-Flame Carbon-Arc Exposure Apparatus.
 7. CSA A123.3-M1979 Asphalt or Tar Saturated Roofing Felt.
 8. CSA B111-1974 Wire Nails, Spikes and Staples.
 9. CAN/CGSB-37.5-M89 Cutback Asphalt Plastic Cement.
 10. CAN/CGSB-51.32-M77 Sheathing, Membrane, Breather Type.
 11. Canadian Roofing Contractors Association (CRCA).

1.3 SUBMITTALS

1. Provide submittals in accordance with Section 01300 – Submittals.
2. Product Data: For all products specified herein, including product data, manufacturer's specifications, storage and handling requirements and recommendations, preparation and installation instructions, adjustment and alignment procedures.

3. Samples:
 1. Submit duplicate 50 x 50 mm samples of each type of sheet metal material, colour and finish.
 1. Colours and textures: as selected by Owner to be accompanied with a hardcopy colour chart and physical sample for selection:
4. Mock Ups: N/a

1.4 **MAINTENANCE DATA & MATERIALS**

1. Data: Provide maintenance data in Operation and Maintenance Manual.
2. Materials: N/A

1.5 **ALLOWANCES**

1. N/A

1.6 **DELIVERY & STORAGE**

1. Delivery to the job site shall be coordinated by the General Contractor.
2. Store in manufacturers unopened packing in a secure, dry and warm, protected with adequate ventilation, free from dust and water location in accordance with manufacturer's printed directions / instructions until installation can proceed. Inspect product upon receipt and report damaged material immediately to delivering carrier and note such damage on the carrier's freight bill of lading.
3. Handle materials carefully to prevent damage.

1.7 **SPECIAL PROTECTION**

1. Provide adequate protection of materials and work of this Section from damage by on site storage, weather, construction activities and other causes.
2. Protect the work of other sections from damage resulting from work of this section and protect the work of this section from damage resulting from work of other sections. Make good such damage to the satisfaction of the Consultant.
3. Contractor to exercise protective treatment and other precautions required through the construction period, to ensure that items listed will be without damage or deterioration other than normal weathering and wear.
4. If items are damaged / soiled as noted above, items are to be replaced / repaired at contractor's expense, not extra cost to the contract.
5. Consult with section of work soiled before cleaning to ensure methods used will not damage their work.
6. All patching and repair due to damage by other subcontractors, shall be performed under this section and paid for by the subcontractor responsible for the damage.

1.8 **WARRANTY**

1. The work and materials of this section shall be warranted in accordance with GC 12.3 of CCDC Document 2 and SC 3.44 of the City of Brantford's Supplementary Conditions, most current issuance but for a period of 3 (three) years from the date of Consultant's Certificate of Substantial Performance.

1.9 **SEQUENCING & SCHEDULING**

1. Ensure all work is installed and completed that will be concealed by this work.

1.10 **PROJECT SITE CONDITIONS (ENVIRONMENTAL CONDITIONS)**

1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions

PART 2 - PRODUCTS

2.1 **MATERIALS**

1. **SHEET METAL MATERIALS:**

1. Zinc coated steel sheet: 24 ga. 0.6 mm core nominal thickness, commercial quality CS type (A) to ASTM A653/A653M, with Z275 designation zinc coating.
2. Aluminum-zinc alloy coated steel sheet: to CSSBI 201M-84 commercial quality, grade with AZ150 coating, regular spangle surface, 24 ga. 0.6 mm base metal thickness, not oiled.

2. **PREFINISHED STEEL SHEET:**

1. Prefinished steel to CAN/CGSB 93.3-M91 with factory applied polyvinylchloride.
 1. Class F1S.
 2. Prefinished with 0.200 mm thick polyvinyl chloride paint on exposed side and 0.005 mm thick epoxy primer on concealed side.
 3. Specular gloss: 30 units +/- 5 in accordance with ASTM D523.
 4. Coating thickness: not less than 200 micrometers.
 5. Resistance to accelerated weathering for chalk rating of 8, colour fade 5 units or less and erosion rate less than 20% to ASTM D822 as follows:
 1. Outdoor exposure period 5000 hours.
 2. Humidity resistance exposure period 5000 hours.
2. Colours and textures:
 1. Colour selections to be from the manufacturer's full list of standard colours.
 2. Coordinate with this specification section and Exterior and Interior Finish Schedule for Standard Colour.

2.2 **ACCESSORIES:**

1. Isolation coating: alkali resistant bituminous paint.
2. Plastic cement: to CAN/CGSB-37.5.
3. Underlay for metal flashing: dry sheathing to CAN/CGSB-51.32 asphalt laminated 3.6 to 4.5 kg kraft paper No. 15 perforated asphalt felt to CSA A123.3.
4. Sealants: 1 part acrylic, high molecular weight polymer flexible sealant Dymonic as manufactured by Tremco Ltd. in colours to match the 3 flashing colours.
5. Cleats: of same material, and temper as sheet metal, minimum 50 mm wide. Thickness 0.8 mm.
6. Fasteners: of same material as sheet metal, to CSA B111, galvanized steel spiral thread, nailing disc, nails of length and thickness suitable for metal flashing application, minimum 25 mm into nailing substrate.
7. Washers: of same material as sheet metal, 1 mm thick with rubber packings.
8. Screws: o. 305 stainless steel, self-tapping hexagonal head, neoprene washer and lead expansion shield.
9. Wedges: high impact polypropylene or rolled lead, 24 mm x 76 mm, tapered 1.6 mm to 6.4 mm.
10. Joint Filler: extruded polyethelane, closed cell, Shore A hardness 20, tensile strength 140 to 200 kPa, oversized 30 to 50%, CFC free.
11. Touch-up paint: as recommended by prefinished material manufacturer.

2.3 **FABRICATION**

1. Fabricate metal flashings and other sheet metal work in accordance with applicable CRCA as indicated to conform to CRCA 'FL' series details.
2. Fabricate aluminum flashings and other sheet aluminum work in accordance with Aluminum Association Aluminum Sheet Metal Work in Building Construction.
3. Form pieces in 2400 mm maximum lengths. Make allowance for expansion at joints.
4. Hem exposed edges on underside 12 mm. Mitre and seal corners with sealant.
5. Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.
6. Apply isolation coating to metal surfaces to be embedded in concrete or mortar.
7. Extend all parapet metal flashings, complete with hemmed edge, to toe of roofing cants.
8. Metal Flashing and Fascia Backer Covers:
 1. Form flashings, copings, parapet and curb flashings, openings for mechanical roof openings and fascia's to profiles indicated of 24 ga. 0.6 mm thick prefinished steel. **Oil canning will not be acceptable.**

9. Reglet's and Cap Flashings:
 1. Formed recessed reglets for roof flashings by Masonry Section 04200.
 2. Cap Flashings shall be to profiles indicated of 24ga (0.6mm) G90 galvanized Grade A prefinished sheet steel conforming to ASTM A525.
10. Scuppers:
 3. Form scuppers from 24 ga. 0.6 mm thick (4.88) kg/m2 prefinished steel sheet metal.
 4. Sizes and profiles as indicated.
 5. Provide necessary fastenings.
 6. Install sheet metal in accordance with CRCA FL5 detail to provide details as shown on drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

1. The Trade shall, together with any and all other Trades involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
2. Trades shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the Trade for correction prior to commencing the work of this section.
3. Commencement of the work of this section shall imply acceptance of all surfaces and conditions.
4. Proceed with installation only after unsatisfactory conditions have been corrected.
5. Verify that the opening sizes and tolerances are acceptable.

3.2 PREPARATION

1. Clean surfaces thoroughly prior to installation.

3.3 INSTALLATION:

1. Dissimilar metals in contact or metals and masonry or concrete, when necessary to prevent corrosion, to be insulated one from another by methods and materials required for such results, as approved by the Consultant.
2. Install sheet metal work in accordance with CRCA FL series details, FL 1, 2, 5, 11, 12, 13, 14, 15, 23, 126, 17 and as detailed.
3. Use concealed fastenings except where approved before installation.
4. Provide underlay under sheet metal. Secure in place and lap joints 100 mm.

5. Counter flash bituminous flashings at intersections of roof with vertical surfaces and curbs. Flash joints using S-lock forming tight fit over hook strips.
6. Lock end joints and caulk with sealant.
7. Install surface mounted reglets true and level, and caulk top of reglet with sealant at locations where concrete or masonry does not occur.
8. Insert metal flashing into reglets under cap flashing to form weather tight junction.
9. Turn top edge of flashing into recessed reglet or mortar joint minimum of 25 mm. Lead wedge flashing securely into joint.
10. Caulk flashing at reglet and cap flashing with sealant.
11. Install pans, where shown around items projecting through roof membrane.

3.4 ROOF SCUPPER DRAINS:

1. Install scuppers as indicated on architectural drawings.

3.5 INSTALLATION OF FASCIAS:

1. Fascia must be placed under prefinished drip edge.
2. All wood construction must be concealed.
3. Fascia's must form the geometry of the overhang.
4. Heads of fasteners colour shall match fascia colour.
5. Install closure strips as required, using pre-finished steel to match.
6. Provide caulking as required to act as closures to complete work.
7. **Oil canning will not be accepted.**

3.6 VENT STACK FLASHING:

1. Vent stack flashing to be SJ-20 or SJ-26 pre-insulated spun aluminum with telescoping cap complete with stainless steel vandal proof cap by Thaler Metal Industries Inc, or approved alternative. Coordinate with Mechanical drawings and specifications for sizes, number and locations.

3.7 CLEAN-UP & ADJUSTMENT

1. Clean in conformance with Division 1 General Requirements.
2. Clean exposed surfaces using methods acceptable to the manufacturer which will not damage finish.
3. Repair finishes damaged during installation, restore finishes so no evidence remains of corrective work.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here. Requirements, references and standards of Section 07620 apply to work of this section as if repeated here.
2. **Scope of Work Description:**
 1. Types and items of sheet metal work include but are not limited to the following:
 1. Metal counter (step) flashings.
 2. Metal gutters / eavestroughs, rain conductors, downspouts / rain water leaders, anchors and accessories.

1.2 REFERENCES & QUALIFICATIONS

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaw and the Ontario Ministry of Labour - all as currently amended. In case of conflict between Codes, the Ontario Building Code will govern.
2. Standards: Quality of fabrication and installation of all sheet metal work shall comply with CSA - Canadian Standards Association, CGSB - Canadian General Standards Board, ULC - Underwriters Laboratories of Canada, FM - Factory Mutual Engineering Corporation, CRCA - Canadian Roofing Contractors Association.

1.3 SUBMITTALS

1. Provide submittals in accordance with Section 01300 – Submittals.
2. Mock Ups: N/A

1.4 DELIVERY & STORAGE

1. Delivery to the job site shall be coordinated by the General Contractor.

1.5 SPECIAL PROTECTION

1. Provide adequate protection of materials and work of this Section from damage by on site storage, weather, construction activities and other causes.
2. Protect the work of other sections from damage resulting from work of this section and protect the work of this section from damage resulting from work of other sections. Make good such damage to the satisfaction of the Consultant.
3. Contractor to exercise protective treatment and other precautions required through the construction period, to ensure that items listed will be without damage or deterioration other than normal weathering and wear.
4. If items are damaged as noted above, items are to be replaced / repaired at contractor's expense, not extra cost to the contract.

1.6 **WARRANTY**

1. Extended Warranty: Submit an unconditional written guarantee for material and workmanship covering the repair and replacement of defective work for a period of **THREE (3) YEARS** from the date of substantial performance of the work. Notwithstanding the generality of the following, leakage, and failure to stay in place will be judged as defective work.
2. Manufacturer's Warranty: Submit Manufacturer's warranty of minimum 20 years for labour and materials.

1.7 **SEQUENCING & SCHEDULING**

1. Ensure all work is installed and completed that will be concealed by this work.
2. Coordinate work with masonry, structural, carpentry, and others necessary to perform work.

PART 2 - PRODUCTS

2.1 **EAVESTROUGH & DOWNSPOUTS**

1. 150mm (6") Eavestrough and rainwater leaders at sloped roof conditions / locations – 24 gauge pre-painted / G-90 metal / aluminum. Complete with all required fasteners, anchors and accessories.
2. Colour to be selected by Owner from manufacturer's standards colours including. Coordinate with Interior and Exterior Finish Schedule.

2.2 **FASTENERS**

1. Per sheet metal product manufacturer's instruction/specification.

2.3 **WATERPROOFING UNDERLAYMENT**

1. Ice and watershield membrane as supplied by W. R. Grace Co. Ltd, or approved alternative.

2.4 **SHEET METAL FLASHING**

1. Sheet metal flashing - 24 ga. Prepainted galvanized steel series 8000 supplied by Stelco - colour to be selected by Owner.

2.5 **SHEET METAL TRIMS**

1. Sheet metal trims - 24 ga. prepainted metal of size and profiles as indicated on drawings. Colour to be selected by Owner.

PART 3 - EXECUTION

3.1 **GENERAL**

1. Preparation of Substrate
 1. Surfaces to be covered with sheet metal shall be smooth and free of defects of every description. All such surfaces shall be cleaned free of dirt, rubbish, and other foreign materials before the work is started. All projecting nails shall be driven flush with the roof boarding.

3.2 INSTALLATION. GENERAL

1. Comply with details and profiles as shown and to match existing. Comply with applicable standards referenced in this Section.
3. Fabricate and install sheet metal work with lines and corners true and accurate. Form exposed faces flat and free of buckles, waves, and avoidable tool marks. Provide uniform, neatly formed seams with minimum exposure of sealants. Except where noted expressly to the contrary, fold back edges of sheet metal to form a hem on the concealed side of all exposed edges.
2. Conceal fasteners and provide for thermal expansion movement throughout the work. Locate all fasteners so as to preclude leakage.

3.3 FLASHINGS. GENERAL

1. Counter (step) flashing shall be provided where roofing abuts vertical surfaces.
2. Loose lock (cross folded loose seams or slip joints) shall be formed between sections of metal flashings by folding the underlying section to form a pocket to receive the outer, overlying section.

3.4 PROTECTION. GENERAL

1. Contractor shall be responsible for the protection of the existing building, facilities, and improvements within the areas where his work is being performed. Any disturbance or damage to the work, the existing building and improvements or any impairments of facilities resulting from the work of this Section shall be properly restored, repaired, or replaced to the satisfaction of and at no additional cost to Owner.

3.5 CLEAN UP

1. Do not allow the accumulation of scraps and debris arising from the work of this Section but maintain the premises in a neat and orderly condition at all times.
2. Remove from roof areas and scaffold all debris, rubbish, and other material resulting from operations in bins provided by Contractor and transport bins to grade by the man and material scaffold hoist where bins will be picked up by the Contractor and removed from the site.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. Coordinate all locations shown on drawings and for all items located herein and normally considered as work covered by this Section.
 2. The term "sealant" to be synonymous with the term "caulking, caulk" where used on the drawings and / or specifications.

1.2 REFERENCES & QUALIFICATIONS

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaw and the Ontario Ministry of Labour - all as currently amended.
2. **Qualifications:**
 1. Applicator for the work of this section shall:
 1. Be approved by the materials manufacturer and the Consultant.
 2. Have at least five (5) years proven satisfactory experience in this type of work.
 3. Have adequate equipment and skilled personnel to expediently complete the work of this section in an efficient and very best workmanlike manner.
 4. Be completely familiar with the published recommendations of the manufacturer of the caulking material being used.
 5. Indication of lack of skill or defective work to be sufficient grounds for the Consultant to reject the installed caulking and to require its immediate removal and complete re-caulking at no additional cost to the Owner during the guaranty period.
 6. Co-operate with the Consultant and/or any inspection and testing agency he may appoint.
 7. Materials to be utilized shall be inspected and tested as required.
 8. Provide cut tests of 6 inches in length in order to ensure correct thickness, hardness, mixing and surface finish. Provide these cut test samples at times and from locations as directed by the Consultant and make good the areas from which the samples are taken.
 9. All tests of the sealant installation shall be inspected by the sealant manufacturer's representative.

1.3 SUBMITTALS

1. Provide submittals in accordance with Section 01300 – Submittals.

2. Product Data:

1. For all products specified herein, including product data, manufacturer's specifications, storage and handling requirements and recommendations, preparation and installation instructions, and any special procedures.

2. Shop Drawings:

1. N/A

3. Samples:

1. For all products specified herein.
2. Colours: as selected by the Consultant to be accompanied with a hardcopy colour chart and physical sample container for each type of caulking or sealant.
3. Mock Ups: Sample joints of each type and colour of caulking shall be prepared at the site in a location directed by the Consultant and be approved by the Consultant before work commences. Approved joints will represent minimum acceptable for the work.
4. Cure samples and under conditions anticipated at job site during construction.

1.4 MAINTENANCE DATA & MATERIALS

1. Data: Provide maintenance data in Operation and Maintenance Manual.
2. Materials: Upon completion of work, deliver to Owner where directed, all left over caulking tubes with sealed ends to prevent drying. Material to be wrapped packages and fully labelled for product and colour.

1.5 ALLOWANCES

1. N/A

1.6 DELIVERY & STORAGE

1. Delivery to the job site shall be coordinated by the General Contractor.
2. Store in a secure and dry location until installation can proceed in accordance with manufacturers instructions.
3. Store in manufacturers unopened packing in a secure, dry and warm, do not let freeze, protected with adequate ventilation, free from dust and water location in accordance with manufacturer's printed directions / instructions until installation can proceed. Inspect product upon receipt and report damaged material immediately to delivering carrier and note such damage on the carrier's freight bill of lading.
4. All items to be packaged and labelled with description of contents along with numbering or nomenclature used on shop drawings and bearing brand and manufacturer's name.
5. Handle materials carefully to prevent damage.
6. Keep products from freezing.

1.7 **SPECIAL PROTECTION**

1. Provide adequate protection of materials and work of this Section from damage by on site storage, weather, construction activities and other causes.
2. Protect the work of other sections from damage resulting from work of this section and protect the work of this section from damage resulting from work of other sections. Make good such damage to the satisfaction of the Consultant.
3. Contractor to exercise protective treatment and other precautions required through the construction period, to ensure that items listed will be without damage or deterioration other than normal weathering and wear.
4. If items are damaged as noted above, items are to be replaced / repaired at contractor's expense, not extra cost to the contract.
5. Consult with section of work soiled before cleaning to ensure methods used will not damage their work.
6. All patching and repair due to damage by other trades, shall be performed under this section and paid for by the trade responsible for the damage.
7. Mask adjacent surfaces as necessary to prevent contamination.
8. Protect all sealant against puncture or damage until sealant has attained its final set.
9. Provide extra protection as required when sandblasting.
10. Provide temporary covers over joints where joints have been cleaned out, but not yet caulked.

1.8 **WARRANTY**

1. The work and materials of this section shall be warrantied in accordance with GC 12.3 of CCDC Document 2 and SC 3.44 of the City of Brantford's Supplementary Conditions, most current issuance, but for a period of **five (5)** years from the date of the Consultant's Certificate of Substantial Performance
2. Provide a written warranty, signed and issued in the name of the Owner stating that caulking work of this section is guaranteed against leakage, cracking, crumbling, melting, shrinkage, running, loss of adhesion, or staining adjacent surfaces, for a period of five (5) years from the date of Substantial Certificate of Completion and that any defective caulking will be replaced.
3. At completion of the work, provide a written statement from the manufacturer or authorized manufacturer's representative that material used in the various applications is the recommended one and that the final application is as recommended by the manufacturer for the construction conditions detailed and for the performance required. These requirements are applicable to every material included in the work of this Section.

1.9 **SEQUENCING & SCHEDULING**

1. Ensure all work is installed and completed that will be concealed by this work.

1.10 **PROJECT SITE CONDITIONS (ENVIRONMENTAL CONDITIONS)**

1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
2. Sealant and substrate materials to be minimum 5 C (41 deg. F.).
3. If necessary to apply sealants below 5 C., consult sealant manufacturer and follow their recommendations.

PART 2 - PRODUCTS

2.1 **MATERIALS**

1. Sealants:
 1. Sealant Type A: Tremco Dymonic 100 (FC for cold weather applications), High-Performance, High-Movement, Single-Component, Polyurethane Sealant or approved alternative.
 1. Colours to be tinted to specifically match the substrate (ie. Mortar, brick, stone colour) or wall colour the sealant is being installed in / on. Custom colour to be carried, but standard colours may be used if chosen by the Consultant.
 2. Sealant Type B: GE SCS1700 Sanitary or Dow Corning 786 / Dowsil 786, Silicone, mildew resistant or approved alternative.
 3. Sealant Type C: Sikaflex - 15 LM. Colours to be tinted to specifically match wall colours or approved alternative.
 4. Sealant Type D: Acoustical sealant, Tremco Manufacturing Company (Canada) Ltd. (Black colour) (non-curing) or approved alternative.
 5. Sealant Type E: Acoustical sealant, Hilti CP 506 Smoke and Acoustic Sealant (acrylic) (white colour) (curable) or approved alternative.
 6. Colour of Sealants: To be selected by the Consultant. Allow for up to 3 colours of each type of sealant. Colours of sealant to change where wall colours change (i.e. banding).
2. Threshold Bedding: Oil base caulking compound, to CGSB 19-GP-6.
3. Sealants containing aromatic solvents, fibrous talc, formaldehyde, halogenated solvents, mercury, lead, cadmium, chromium and their compounds, are not permitted.

2.2 **ACCESSORIES**

1. Primers: type recommended by sealant manufacturer and to prevent staining of substrate materials.
2. Joint Cleaner: xylol, methylethyleketon or non-corrosive type recommended by sealant manufacturer and compatible with joint forming materials.
3. Backer Rod: Kool-Rod by W.R. Meadows Sealtight; backer rod for cold applied sealants, closed cell, polyethylene, flexible, rope like foam joint backing material or approved alternative.

4. Bond Breaker: pressure sensitive plastic tape, which will not bond to sealants.
5. Vent Tubing: 6 mm (1/4") inside diameter extruded polyvinyl chloride tubing.

PART 3 - EXECUTION

3.1 EXAMINATION

1. The Contractor shall, together with any and all other subcontractors involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
2. Contractor shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the subcontractor for correction prior to commencing the work of this section.
3. Commencement of the work of this section shall imply acceptance of all surfaces and conditions.
4. Proceed with installation only after unsatisfactory conditions have been corrected.
5. Verify that the opening sizes and tolerances are acceptable

3.2 PREPARATION

1. Use a dry, clean, oil free compressed air stream to remove dust and other contaminants. Masonry surfaces shall be cleaned with wire brush and then blown clean. Any waterproofing treatments contaminating the joint must be completely removed.
2. Clean surfaces thoroughly prior to installation.
3. Remove rust, mill scale and coatings from ferrous metals by wire brush, grinding or sandblasting.
4. Remove oil, grease and other coatings from non-ferrous metals with joint cleaner.
5. Prepare concrete, masonry, glazed and vitreous surfaces to sealant manufacturer's instructions.
6. Examine joint sizes and correct to achieve depth ratio $\frac{1}{2}$ of joint width with minimum width and depth of 6 mm (1/4"), maximum width 25 mm (1").
7. Before caulking, fill spaces deeper than 13 mm ($\frac{1}{2}$ ") with bedding material, packed tightly in place and set below finished surfaces to suit specified sealant depth. Provide joints less than 13 mm ($\frac{1}{2}$ ") deep with an approved joint breaker.
8. Where necessary to prevent staining, mask adjacent surfaces with tape prior to priming and caulking.
9. Apply bond breaker tape where required to manufacturer's directions.
10. Prime sides of joints to sealant manufacturer's instructions immediately prior to caulking.
11. Remove all existing caulking and prepare for replacement.

12. Check form release agent used on concrete for compatibility with sealant and primer. If they are incompatible inform Consultant and change sealant to compatible type approved by Consultant or clean concrete to the Consultant's approval.

3.3 **INSTALLATION:**

1. Before application of any sealants, confirm that sealant material is compatible with the materials and finishes of the surfaces to which the material is applied or is in contact with.
2. Apply sealants, primers, joint fillers, bond breakers, to manufacturer's instructions. Apply sealant using a gun with proper size nozzle. Use sufficient pressure to fill voids and joints solid. Superficial pointing with skin bead is not acceptable.
3. Thoroughly mix caulking materials with a mechanical mixer capable of mixing at 80-100 rpm without mixing air into the material. Mix material in accordance with the manufacturer's directions and instructions.
4. Install caulking to the joints using manually operated or power operated guns. Use nozzles of the correct size and shape and provide sufficient pressure to completely fill the joints and make adhesive contact with the backs and sides of the joints. Caulk solidly around entire perimeter of openings.
5. Finish the surface of the caulking with a smooth, full bead, free from ridges, wrinkles, sags, air pockets and embedded impurities. Tool the finish bead with a water wet or dry tool as recommended by the manufacturer, to a slightly concave joint.
6. In masonry cavity construction, vent caulked joints from cavity to 3 mm (1/8") beyond external face of wall by inserting vent tubing at bottom of each joint and maximum of 1500 mm (5'-0") o.c. vertically. Position tube to drain to exterior.
7. Clean adjacent surfaces immediately and leave work neat and clean. Remove excess sealant and droppings using recommended cleaners as work progresses. Remove masking after tooling of joints. Finish work damaged due to this work shall be replaced at this contractor's expense to satisfaction of the Consultant.
8. Set thresholds in a full bed of caulking compound at least 1/2" (12 mm) thick. Remove excess compound after threshold is set and neatly point joints.
9. All hidden joints or joints concealed by metal covers occurring in window and door frames, metal curtainwalls, other locations, to be clean, sealant applied and tooled, and inspected and approved prior to the installation of metal covers.
10. Use of sealants specified in the following locations:
 1. Type A: Use at all exterior locations (including but not limited to hollow metal and aluminum doors / frames / screens, entrance framing, curtain wall framing, control joints / shrinkage joints / movement joints / expansion joints, compartmentalization control joints, etc.) and interior control joints / shrinkage joints / movement joints / expansion joints. NOTE: this sealant must not be painted over.
 2. Type B: Between countertops and walls, sinks, showers, bath tubs, urinals, whirlpools, bathroom fixtures, rimless sinks, and all high humidity locations at shower and changeroom locations.

3. Type C: At all remaining interior locations (including but not limited to hollow metal and aluminum doors / frames / screens, entrance framing, curtain wall framing, etc.). Where 'accent' colour (ie. of wall or door frame transition) does not match a standard colour, caulking to be painted over to match 'accent' paint colour if not tinted to specifically match wall colours.
4. Type D: At underside all sill plates (metal and wood) and all other locations as noted on drawings and herein.
5. Type E: At all Soundproofing, vibration control, noise reduction, acoustic and all other locations as noted on drawings and herein.

3.4 **LOCATIONS**

1. Do all caulking required (except where specified under other sections).
2. Caulk exposed control joints and expansion joints occurring in masonry and concrete walls. (See item 3.6)
3. Caulk along underside of projecting flashings, except at roof eave detail.
4. Caulk joints between aluminum panels, window or door frames to adjacent building components around perimeter of every external window or door opening at interior and exterior sides aluminum units which work shall be performed by 08556 – Vinyl & Fibreglass Windows.
5. Caulk around exterior louvres.
6. Set window / door sills in a bed of caulking compound by Sections 08556.
7. Interior hollow metal where it abuts interior finishes.
8. Caulk where shown on drawings and not specified in other sections.
9. Caulk joints at junction of different materials and junction of surfaces in different planes as required or directed (i.e. concrete to metal, concrete to masonry, masonry to metal, masonry to drywall, etc.).
10. Caulking elsewhere to provide a water and weatherproof condition.
11. Caulk areas on interior walls to stop air infiltration.
12. Caulking between resilient/sheetflooring and masonry or concrete walls; and between resilient/sheet flooring and hollow metal frames (Type 'B' sealant).
13. Caulk joints between masonry and gypsum wallboard or plaster.
14. Caulk control joints in drywall partitions.
15. Caulk around access panels, built-in specialties, grilles, pipes, ducts, conduit, outlet boxes, etc. penetrating floors, walls and ceilings.
16. Caulk joints around metal items projecting from ceramic tile work (Type "B" sealant).
17. Caulk around toilets, urinals, sinks, bathtubs, showers, etc. at junction with floor and wall surfaces (Type "B" sealant).

18. Caulk joints as required to provide soundproofing where soundproofing walls are indicated.
19. Caulk joints between wood window and wall surfaces and wood door frames and wall surfaces, etc.
20. Caulk perimeter of all countertops and window plastic laminate sills (including underside) with (Type "B" sealant).
21. Caulk around access panels and washroom accessories in ceramic tile faced walls.

3.5 CAULKING NOT TO BE DONE UNDER THIS SECTION

1. Caulking of Sidewalk Joints - Section 02520
2. Firestopping and smoke seals - Section 07270
3. Caulking between aluminum work and aluminum work to surrounding surface - Section 08556.
4. Caulking of Roofing - Section 07300
5. Caulking of Metal Flashings - Section 07620
6. Caulking of Vapour Barrier - Section 07190
7. Caulking and sealants for glazing - Section 08556
8. Caulking of Acoustic Drywall Partitions - Section 09250
9. Caulking of Ceramic and Quarry Tile - Section 09300
10. Caulking of sheet flooring - Section 09650

3.6 CAULKING OF MASONRY CONTROL JOINTS. COMPARTMENT CONTROL JOINTS

1. Caulk all Masonry and Compartment Control Joints. Refer to exterior elevations, interior elevations, all details on drawings and shop drawings.

NOTE: For Base Price at each control joint shown on exterior wall elevation allow for control joint to also be located in back up masonry concrete block wall, backer rod and Caulking by this Section. Compressible joint filler by Masonry Section 04100.

3.7 CLEAN-UP & ADJUSTMENT

1. Clean in conformance with Division 1 General Requirements.
2. Clean exposed surfaces using methods acceptable to the manufacturer which will not damage finish.
3. Repair finishes damaged during installation, restore finishes so no evidence remains of corrective work.
4. Remove excess materials, maskings and debris and clean adjacent surfaces immediately after application.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. Coordinate all locations shown on drawings and for all items located herein.
 2. All exterior and interior hollow metal doors, frames and screens, fire rated and non-fire rated. Coordinate with door and screen schedules, electrical, mechanical, and security drawings.
 3. Coordinate with Door Finish Hardware Schedule.
 4. Reinforcing of all exterior and interior hollow metal doors, frames and screens for any operational hardware requirements.

1.2 REFERENCES & QUALIFICATIONS-

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaw and the Ontario Ministry of Labour, Fire Marshal requirements - all as currently amended.
2. Certificates:
 1. N/A
3. Qualifications:
 1. Materials and workmanship to be in accordance with Canadian Steel Door and Frame Manufacturer's Association Specifications Standards for steel doors and frames.
 2. Products used in the work of this Section shall be produced by manufacturers regularly engaged in manufacture of similar items and with a history of successful production acceptable to the Consultant.
 3. Only steel hollow metal doors and frames manufactured by members of the Canadian Steel Door and Frame Manufacturer's Association (CSDFMA) are eligible for use on this project.
4. References: (All as currently amended)
 1. Supply fire rated with identification labeled steel doors and frames in accordance with NFPA-80, current edition.

1.3 SUBMITTALS

1. Provide submittals in accordance with Section 01300 – Submittals.

2. Product Data:

1. For all products specified herein, including product data, manufacturer's specifications, storage and handling requirements and recommendations, preparation and installation instructions, adjustment and alignment procedures.

2. Shop drawings:

1. Shop drawings shall be submitted by the specified manufacturer only.
2. Before shop drawings and fabrication is started, take critical measurements at the site to facilitate installation and fitting of work.
3. Shop drawings shall be of best quality craftsmanship, incorporating specific job details not generic details.
4. Shop drawings that are submitted are to be in the units of the tendered drawings, metric is mandatory with imperial as additional alternate is acceptable
5. Indicate each opening infill, sizing, components, leaf type, cutouts, mechanical grilles, undercuts, closures, soundproofing, frame type (including gypsum board or masonry frames - ma), mullions, removable mullions, material, core thickness, reinforcements, glazing stops, glazing make-up and sizing, glazing tape, location and type of anchors, exposed fastenings, preparations and hardware / security installation, finishes, fire ratings, gauges, wall types and framesizing.
6. Fire Ratings indicated on the life safety plan are minimums. If opening infill design cannot be satisfied at specified rating (ie. 20 min), supply opening infill with acceptable higher rating (ie. 45 min.).

7. Samples: N/A

8. Mock Ups: N/A

1.4 MAINTENANCE DATA & MATERIALS

1. Data: Provide maintenance data in Operation and Maintenance Manual.
2. Materials: N/A

1.5 ALLOWANCES

1. N/A

1.6 DELIVERY & STORAGE

1. Delivery to the job site shall be coordinated by the General Contractor.
2. Store in manufacturers unopened packing in a secure, dry and warm, protected with adequate ventilation, free from dust and water location in accordance with manufacturer's printed directions / instructions until installation can proceed. Inspect product upon receipt and report damaged material immediately to delivering carrier and note such damage on the carrier's freight bill.
3. All items to be packaged and labelled with description of contents along with numbering or nomenclature used on shop drawings and bearing brand and manufacturer's name.

4. Handle materials carefully to prevent damage.

1.7 SPECIAL PROTECTION

1. Provide adequate protection of materials and work of this Section from damage by on site storage, weather, construction activities and other causes.
2. Protect the work of other sections from damage resulting from work of this section and protect the work of this section from damage resulting from work of other sections. Make good such damage to the satisfaction of the Consultant.
3. Contractor to exercise protective treatment and other precautions required through the construction period, to ensure that items listed will be without damage or deterioration other than normal weathering and wear.
4. If items are damaged / soiled as noted above, items are to be replaced / repaired at contractor's expense, not extra cost to the contract.
5. Consult with section of work soiled before cleaning to ensure methods used will not damage their work.
6. All patching and repair due to damage by other subcontractors, shall be performed under this section and paid for by the subcontractor responsible for the damage.

1.8 WARRANTY

1. The work and materials of this section shall be warrantied in accordance with GC 12.3 of CCDC Document 2 and SC 3.44 of the City of Brantford's Supplementary Conditions, most current issuance.

1.9 SEQUENCING & SCHEDULING

1. Ensure all work is installed and completed that will be concealed by this work.
2. The Contractor shall cooperate in the coordination and scheduling of the product to avoid delays in job progress.

1.10 PROJECT SITE CONDITIONS (ENVIRONMENTAL CONDITIONS)

1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.11 TESTING

1. N/A

PART 2 - PRODUCTS

2.1 MANUFACTURERS

1. Approved Manufacturers:
 1. S.W. Fleming
 2. Baron

3. Daybar
4. Artek
5. Trillium
6. Or approved alternative

2.2 **MATERIALS**

1. Steel: Cold rolled steel, double annealed patent levelled, fully pickled and free from scale and internal defect. Surfaces shall be free from perceptible waves, buckles and other imperfections in conformance with ASTM A1008.
2. Zinc Coating: Wipe coated galvanizing in conformance with ASTM 527, Coating Class A01.
3. Primer for Touch-Up: conforming to CGSB 1GP-181M.
4. Labels: Provide ULC or Warnock-Hersey Labels for fire rated opening infills.
5. Thermal Break: Polyvinyl Chloride (PVC) thermal break.
6. Reinforcing Channel: to CAN/CSA - G40.21-M7, grade 300W, 3.25 mm.
7. Door Leafs:
 1. Exterior Door Leafs: Flush type, 44mm (1 ¾") thick, 16 gauge (1.613mm), continuously welded (grind and fill smooth welded seams), conforming to ASTM A527, cold rolled, hollow metal construction, reinforced with vertical interior stiffeners, all voids filled with semi-rigid fibrous insulation minimum density 24 kg/m³ polystyrene / polyurethane. Install top and bottom metal caps tack welded in place.
 2. Interior Door Leafs: Stile and rail type, 44mm (1 ¾") thick, 18 gauge (1.311mm), welded seams 30% overall and 50mm (2") length welds minimum (grind and fill smooth welded seams), weld above and below all hinge locations, cold rolled, hollow metal construction, honeycomb structural core consisting of pre-expanded, resin impregnated small cell Kraft paper having 19mm (¾") cell size to fill thickness of door leaf.
 1. Provide 16 gauge (1.613mm), continuously welded (grind and fill smooth welded seam), reinforced with vertical interlocking stiffeners at all high-traffic areas (all exterior entrances, all doors between staff space and shop space(s), washroom, all doors within shop space).

8. Door Leaf Undercuts: Undercut or rebate bottom rails as required.
 1. All door leafs to be undercut by 19mm (3/4") typical.
 2. Washroom (single water closet only), Change Room, Laundry, Dorm and other door leafs can be undercut maximum 25mm (1"), to be coordinated with mechanical so door leaf grille / louver is not required.
 3. All fire rated door leafs to be undercut maximum 19mm (3/4").
9. Door and Screen Frames:
 1. Exterior Door and Screen Frames: 16-gauge (1.613mm), continuously welded (grind and fill smooth welded seams), cold rolled, hollow metal construction, thermally broken (interior and exterior frame sections shall be separated by a continuous thermal break), continuous perimeter weather stripping, aluminum threshold set in bed of caulking, door closer. Fill frame void solid with spray-in-place insulation with welded 10mm tee anchor, supply 3 anchors for each jamb up to 2200mm high, supply 4 anchors if jamb exceeds 2200mm. Equal to "Therma-Frame" door frames and screens as manufactured by S. W. Fleming Ltd.
 2. Interior Door and Screen Frames: 16-gauge (1.613mm), continuously welded (grind and fill smooth welded seams), cold rolled, hollow metal construction. Fill frame void solid with mortar (fully grouted frame) on concrete or concrete block framing and sound batt insulation on metal or wood framing.
 1. Install gypsum board returns on gypsum board walls where gypsum board is installed inside the frame throat.
 2. Install masonry return where gypsum board is not returned inside the frame throat.
 3. Metal Panels and Closures: 16-gauge (1.6mm) hot rolled wipe coat zinc coated steel closures (at corners and/or between frames) and panels.
 4. Finish: All external and internal parts, reinforcing, panels, etc. shall be "wipe coat" galvanized steel / galvaneal, all galvanizing to be paintable.
 5. Knock down frames are acceptable for existing walls with new hollow metal door frames.

2.3 **ACCESSORIES**

1. Doors shall be reinforced, mortised, drilled and tapped to receive templated hardware including mortise type hardware. Reinforce for surface and concealed mounted hardware, coordinate with finish hardware schedule and drawings.
 - 14-gauge integral closer reinforcing
 - 10-gauge high frequency type reinforcing at all hinge locations
 - 12-gauge cylindrical lock reinforcing assembly
 - 16-gauge end channels top and bottom
 - 16-gauge mortise lock reinforcing assembly
 - 16-gauge reinforcing plate in back (push side) of door (panichardware)
 - 16-gauge top and bottom metal caps tack welded in place
 - 20-gauge vertical interlocking stiffeners at 150mm (6") on center maximum (welded to both face sheets)

2. Hinges: All interior door leafs are to have 3 ball bearing hinges. All exterior door leafs are to have 4 hinges.
 1. All high traffic areas (identified above) to have continuous hinges.
3. Thresholds: All exterior doors are to have thermally broken extruded aluminum thresholds. All thresholds to be as wide as the door frame.
4. Doorstops: All doors are to have door stops.
 1. Doorstops are to be installed on the floor where the door opens against a wall or partition that is wood or metal framed and installed on the wall at handle location that is concrete block or concrete.
 2. Doorstops are to be installed on the top of the door frame where the door does not open against a wall or partition.
5. Silencers: All interior doors are to have x3 door silencers minimum.
6. Weatherstripping: All exterior doors are to have continuous weatherstripping around all door leaf perimeters.
7. Door Grilles / Louvres: All gang washrooms (over one water closet) are to have door grilles placed at bottom of door leaf up 200mm (bottom rail is to be 200mm). Grilles are to be primed and painted to match the same colour as the door leaf. Coordinate with mechanical for sizings.

2.4 **FABRICATION**

1. General
 1. Fit and assemble work in shop where possible. Execute according to details and approved shop drawings. Where shop fabrication is not possible, make trial assembly in shop.
 2. Weld all components of doors and frames. File or grind exposed welds smooth and flush. Exposed welds shall be continuous.
 1. Fully welded frames are to be used in all new wall systems and existing wall systems without wrap around frames.
 2. Knock-down frames are to be used in all existing wall systems with wrap around frames.
 3. Workmanship shall be best grade modern shop and field practice known to recognized manufacturers specializing in this work. Joints and intersecting members accurately fitted made in true planes with adequate fastening.
 4. Insulate where necessary to prevent electrolysis between metal to metal or metal to masonry or concrete.
 5. Fabricate and erect work square, plumb, straight, true and accurately fitted. Provide adequate reinforcing and anchorage.

6. Clean, scrape and remove rust, mill scale, grease or extraneous material from frames and doors following fabrication. Flood coat with air-drying paste filler and again sand to eliminate all unevenness or irregularities. Apply in shop a full smooth coat of zinc chromate primer to all surfaces. Deliver work to site with primer undamaged and otherwise satisfactory for following work specified in Section 09900.

2. Door Leafs:

1. Prepare doors to receive glass or grilles as required. Provide removable stops secured with countersunk tamperproof head screws at 150mm (6") o/c. Prepare exterior doors to receive 25mm (1") thick insulated sealed glazing units.
2. Weld all door and panel components together to provide integrated units, square, true and free from distortion or waves.
3. All door heads and bottoms shall have metal channel shaped members, closing off top and bottom of door flush with face skins. Close off top and bottom of exterior doors even with outer edge of door.

2. Fire Rated Doors Leafs:

1. Provide doors and hardware with Underwriters Laboratories of Canada (ULC) labels, clearly visible, where required to be fire rated or installed in a fire rated assembly.

3. Door and Screen Frames:

1. Cut mitres and weld corners continuously along inside frame profile. Fill corners of steel frames with metallic paste filler and sand smooth and uniform. Do not weld corner of removable stop.
2. Provide 10-gauge (3.51mm) channel stiffeners in mullions each side of door openings occurring in screens, or as required to provide a rigid installation.
3. Prepare removable stops secured with counter-sunk tamperproof screws at 150mm (6") on center.
4. Provide three (3) neoprene single stud bumpers for each interior door frame and (2) bumpers at head for pairs of doors.
5. Prepare frames for mortise type hardware at all doors where applicable except panic hardware locations. Reinforce for butts with 6.35mm (1/4") steel plate, drill and tap as required. Reinforce both sides of every door closer, provide for concealed door closers where required.
6. Cover reinforcement plates or attachments and cut-outs with 22-gauge (0.853mm) steel sheet boxes to protect against mortar. Provide channel or angle spreaders readily removable.
7. Provide adjustable "Tee" or wire masonry anchors with head of No. 6 gauge (4.94mm) steel and body of 10-gauge (3.510 mm) corrugated steel where frames are built into masonry, except at thermal broken frames. Provide manufacturer recommended anchor at all other locations.
8. Supply three anchors for jambs between 1219mm (4'0") and 2134mm (7'0") and four anchors for jambs exceeding 2134mm (7'0") high. Adjustable type shall be

as recommended by manufacturer. Provide adjustable jamb anchors for fixing at floor.

9. Provide head reinforcement in frames wider than 1200mm (4'-0") and where indicated or recommended by manufacturer.
10. Prepare frames for electric hardware and security systems. Reinforce and drill and tap frames as required. Coordinate with Div.16.
11. Prepare frames for continuous door length type hinges where indicated on door schedule and notes.
12. Provide 12-gauge (2.66mm) reinforcing in frames for continuous door length type hinges.
13. Provide removable mullions where indicated on door frame types.

4. Fire Rated Door and Screen Frames:

1. Provide frames and screens and hardware with Underwriters Laboratories of Canada (ULC) labels, clearly visible, where required to be fire rated or installed in a fire rated assembly.

5. Thermal Door Frames and Screens

1. Frames must meet or exceed CGSB 82-GP-5M.
2. Thermal break and the sections must not be fixed by screws, grommets or other fastening devices.
3. Where welded frames are employed, welds must not cause thermal transfers between exterior and interior surfaces of the frame sections.
4. Wall and floor anchors to be supplied to suit wall conditions and shall be designed so as not to permit thermal transfers from exterior to interior surfaces of the frames sections.
5. Where doors are required, frames shall be mortised, reinforced, drilled and tapped to receive hardware as specified in the Door Finish Hardware Schedule.
6. Provide reinforcement in frames wider than 1200mm (4'-0") and where indicated or recommended by manufacturer.
7. Prepare frame for hardware, electronic hardware and security systems. Drill, tap and reinforce frames where required.
8. Prepare for insulated glass units at all glass locations in doors and screens.

PART 3 – EXECUTION

3.1 EXAMINATION

1. Beginning of installation means acceptance of existing surfaces and substrate. If substrate preparation is the responsibility of another installer, notify Consultant of unsatisfactory preparation before proceeding.

3.2 **PREPARATION**

1. Clean surfaces thoroughly prior to installation.
2. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 **INSTALLATION**

1. Install in accordance with manufacturer's installation instructions and recommendations along with approved submittals.
2. Coordinate with mechanical and electrical for any final connections.
3. Frame Installation:
 1. Allowable limit of distortion shall be 1.5mm (1/16") out of plumb each jamb, measured on face of frame, resulting in maximum twist of frame of 3mm (1/8") measured diagonally from upper to lower corner.
 2. At masonry walls: install frames using the corrugated or wire masonry anchors. At preformed openings and exterior thermally broken doors use machine screws and expansion anchors as provided for this application. After installation, fill countersunk screw heads flush with frame and sand smooth ready for painting. Fill exterior frames with spray-on insulation by Section 07270. Fill interior frames with mortar.
 3. Brace frames solidly in position while being built in. Install temporary spreader of wood at mid-height of frame until adjacent wall work is completed. Provide vertical support at centre of head for openings of 4'-0" (1200 mm) wide or wider.
 4. Remove temporary jamb spreader bars and vertical supports only after frames are securely anchored in place.
4. Door Leaf Installation:
 1. Install hollow metal doors plumb, true and level and at correct elevation.
 2. Co-ordinate installation of hardware.
 3. Install hollow metal panels and closures with concealed fastenings.
 4. Install acoustical assembled doors and frames with sound proof weatherstripping and drop-down door seals as per manufacturer's installation instructions.
5. Install fire rated doors and frames in accordance with National Fire Codes, Volume 4, produced by National Fire Protection Association (NFPA 80).
6. Attach fire rating labels to doors, frames and screens.
7. Make allowances for deflection of structure to ensure structural loads are not transmitted to frames.
8. Install doors and hardware in accordance with hardware templates and manufacturer's instructions.
9. Install glazing (lites), glazing tape and stops.

10. Install door grilles and louvres provided by Mechanical Contractor.
11. Test and ensure proper and smooth operation and make necessary adjustments until satisfactory results are obtained.

3.4 CLEAN-UP

1. Clean in conformance with Division 1 General Requirements.
2. Remove rust, clean and touch-up any damaged galvanizing with "Zincrich" or "Galvicon" paint.
3. Ensure all surfaces are prepared for primer and paint.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. All exterior and interior overhead sectional door locations and all locations shown on drawings and for all items located herein.

1.2 REFERENCES & QUALIFICATIONS

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaw and the Ontario Ministry of Labour - all as currently amended.
2. **Qualifications:**
 1. Door manufacturer shall have at least 10 years experience in manufacturing door type specified.
 2. Installation and supply shall only be by the specified manufacturer and authorized, qualified representative dealer for the region and product manufacturers specified.
3. **References:**
 1. ASTM A 653/A653M-02a - Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
 2. ASTM A792M-02 - Specification for Steel Sheet, Aluminum-Zinc Alloy-Coated by the Hot-Dip Process, General Requirements
 3. CSA-G40.20/G40.21-98 - General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steels
4. Materials and work shall be of best quality conforming to rules and regulations of local Hydro Authority and any other Board, Service Company or authorities having jurisdiction.
5. Design doors and tracks to withstand basic wind load while in the closed position of 0.47 kPa (10 psf). Maximum deflection while the door is in open horizontal position shall not exceed 1/120 of the span.

1.3 SUBMITTALS

1. Provide submittals in accordance with section 01300 – Submittals
2. **Product Data:** For all products specified herein, including product data, manufacturer's specifications, storage and handling requirements and recommendations, preparation and installation instructions (for door and hardware), adjustment and alignment procedures.
3. **Shop Drawings:**
 1. Shop drawings shall be submitted by the specified manufacturer only.
 2. Before shop drawings and fabrication is started, take critical measurements at the site to facilitate installation and fitting of work.
 3. Shop drawings shall be of best quality craftsmanship, specifically prepared on one

standard size drawing sheet.

4. Submittal Drawings showing fabrication and installation doors including plans, elevations, sections, details of components, metal thickness, insulation, clearances required, hardware, operating mechanism, and adjacent construction and attachments to the other units of Work. Include wiring diagrams for coordination with electrical trade.
5. Provide a letter of conformance indicating that the doors are installed in accordance to the drawings and the specifications
6. Samples:
 1. Colours as selected by the Owner to be accompanied with a hardcopy colour chart for selection, all colour selections to be from the manufacturer's full list of standard colours.
7. Mock Ups: N/A

1.4 MAINTENANCE DATA & MATERIALS

1. Data: Provide maintenance data in Operation and Maintenance Manual.
2. Materials: N/A

1.5 ALLOWANCES

1. N/A

1.6 DELIVERY & STORAGE

1. Delivery to the job site shall be coordinated by the General Contractor.
2. Store in manufacturers unopened packing in a secure, dry and warm, with adequate ventilation, free from dust and water location in accordance with manufacturer's printed directions until installation can proceed.
3. All items to be packaged and labelled with description of contents along with numbering or nomenclature used on shop drawings. Each item is to be individually wrapped complete with all fittings and accessories as required.
4. Handle materials carefully to prevent damage.
5. Handle panels with care. Do not slide panels over rough surfaces or each other.

1.7 SPECIAL PROTECTION

1. Provide adequate protection of materials and work of this Section from damage by on site storage, weather, construction activities and other causes.
2. Protect the work of other sections from damage resulting from work of this section and protect the work of this section from damage resulting from work of other sections. Make good such damage to the satisfaction of the Consultant.
3. Contractor to exercise protective treatment and other precautions required through the construction period, to ensure that items listed will be without damage or deterioration other than normal weathering and wear.
4. If items are damaged as noted above, items are to be replaced / repaired at contractor's expense, not extra cost to the contract.

1.8 **WARRANTY**

1. The work and materials of this section shall be warranted in accordance with GC 12.3 of CCDC Document 2 and SC 3.44 of the City of Brantford's Supplementary Conditions,, most current issuance, but for a period of **3** years from the date of the Consultant's Certificate of Substantial Performance **– 10 years against delamination of the panels. 1 year on materials and workmanship.**
2. Further warrant that door shall remain draft tight and operate smoothly.
3. Promptly correct defects and deficiencies which become apparent within warranty period at no expense.

1.9 **SEQUENCING & SCHEDULING**

1. Ensure all work is installed and completed that will be concealed by this work.

1.10 **PROJECT SITE CONDITIONS (ENVIRONMENTAL CONDITIONS)**

1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 - PRODUCTS

2.1 **MANUFACTURERS**

1. Thermatite T200 51mm (2") thick Ribbed, Steel Jamb Overlapping Door, High Lift design by Richards-Wilcox of Canada Ltd, or approved alternative.

2.1 **MATERIALS**

1. Steel: CSA-G40.20/G40.21-98, Grades 260W and 300W.
2. Galvanized Steel Sheet (Commercial Quality): Galvanizing as specified ASTM 653/A653M, plain commercial galvanized stretcher levelled or temper rolled. Where steel is exposed and finish painted specially treated by a phosphate conversion process or similar pre-paintprocess.
3. Aluminum Zinc Coated Steel Sheet (Commercial Quality): Galvalume AZ150 conforming to ASTM A792M by Dofasco, Inc.
4. Galvanize to zinc coating designation Z275.

2.2 **ACCESSORIES**

1. Door Sections: Size and lift type as indicated on drawings
 1. Steel skins with polyurethane core sandwich type construction, interior and exterior skins separated by continuous thermal break and shall feature WeatherLoc™ tongue-and-groove joint for weather-tight seal between sections. Sections shall have a minimum thermal insulating value of RSI 3.22 (R18.28).
 2. Exterior Skin: Structural quality hot-dipped galvanized steel, 0.36 mm (0.014") minimum, factory applied baked on polyester paint finish, ribbed profile.
 3. Interior Skin: Structural quality hot-dipped galvanized steel, 0.33 mm (0.013") minimum, baked-on acrylic paint finish, non-repeating random stucco texture and rib pattern.

4. Ends of each door section shall be capped with 1.6 mm (0.0625") hot dipped galvanized steel full height end caps. Doors width 16'-3" (4953 mm) and over shall all have double end caps.
 5. Insulation: Cavity shall be filled on continuous process, formed-in-place, CFC and HCFC free rigid polyurethane core, interior and exterior skins shall feature thermal break.
 6. Reinforcements: Provide 0.9 mm (0.039") minimum, continuous reinforcing strip, within core of door sections, for all hardware, accessories and mounting locations. Reinforcing strip must be of adequate width to enable the attachment of all fasteners and screws to penetrate both door interior skin and reinforcing strip. Fasteners or screws etc., secured only to the door skin will not be acceptable.
 7. Weather-stripping: Doors shall be equipped with a heavy duty, factory installed continuous top seal to seal against header, continuous replaceable seals between sections and vinyl bulb shaped astragal on the bottom edge of the bottom section. Dual Durometer vinyl jamb weather seal bolted to the continuous adjustable mounting angle (ADCA) for easy replacement, as supplied by Richards- Wilcox Canada, or approved alternative.
 8. Door Finish: Exterior finish shall be manufacturers standard White colour and the interior face shall be standard White colour.
 9. Trusses: If required, provide adequate number of galvanized steel linear type reinforcing trusses to meet the wind loading.
2. Hardware:
1. Standard of Acceptance: Linear Hardware System as manufactured by Richard-Wilcox Canada, or approved alternative. Doors shall be equipped with double end roller brackets and long stem rollers.
 2. Finish: Door tracks and track mounting hardware and torsion assembly mounting brackets shall be hot-dip galvanized.
 3. Track: 2.7 mm (12ga), thick commercial galvanized track, formed track 80 mm (3 1/8") overall outside dimension. Vertical track sloped for weather tight closing. Make curves of proper radius for quiet and free action and mount to full size gusset plates. Horizontal and vertical track shall join curve on gusset plate; reinforce horizontal tracks full length with steel hangers to prevent deflection. Mount vertical tracks to door using continuous full length track mounting angles to prevent movement in vertical tracks. Size and thickness of steel angles to suit door opening and as recommended by manufacturer.
 4. Track Angle: Continuous adjustable track angle (ADCA), bolted type, field adjustable to ensure weather tight seal and serviceability, fabricated from 2.4 mm (13ga) commercially galvanized steel, designed to provide continuous support to the vertical track. Combination angle and clip mounting not acceptable.
 5. Hinges: Linear type, fabricated from 2.75 mm (12ga) thick galvanized steel with embossments designed to resist higher load and to provide greater stability and improved performance. Doors width 16'-3" (4953 mm) and over shall have double end hinges (unless recommended by installer and manufacturer) featuring full width bushing for both the hinge pivot and roller carries to allow for ease installation and eliminating any possibility of misalignment of the hinges.
 6. Track Hangers: Minimum 32 x 32 mm (1 1/4" x 1 1/4") steel angles roll formed from 2.0 mm (0.078") commercially galvanized steel. Prime and paint hangers to match ceiling colour. **Note: All hangers and their track system mounts to be cushioned on soft neoprene pads for noise and vibration transfer control.**

7. Weather-stripping: Doors shall be equipped with a heavy duty, factory installed continuous top seal to seal against header, continuous co-polymer joint bulb seal between sections and vinyl bulb shaped astragal on the bottom edge of the door. Dual Durometer vinyl jamb weather seal, one bolted to the continuous adjustable mounting angle (ADCA) for easy replacement, the other installed on the jamb (aluminum / vinyl), as supplied by Richards-Wilcox Canada, or approved alternative.
8. Rollers: Steel rollers 73 mm (2 7/8") diameter, with ten (10), 8 mm (5/16") diameter ball bearings, 11 mm (7/16") diameter roller axles and both inner and outer ball races of hardened steel. Length of roller stem as required.
9. Linear Roller Brackets: Fabricated from 2.7 mm (12 ga) galvanized steel.
10. Shaft and Counter Balance Springs: Helically wound torsion springs manufactured from oil tempered spring wire stress relieved, minimum 10,000 cycles. Aluminum die cast grooved drums and flexible galvanized aircraft cables, 7 x 19 construction, mounted on minimum 25 mm (1") CRS solid steel shaft, keyed full length, rolling on flange bearings. Install intermediate shaft brackets across head of shaft as required for proper operation.
11. Bumper springs: Installed at the end of each horizontal track to prevent door over travel.
12. Track Guards: Continuous 4.7 mm, thick x 1524 mm, high (3/16" x 5'-0") chamfered at top at 45 degrees, painted safety yellow finish.
13. Weld joints full length and tack weld to suit requirements in accordance with door manufacturers' recommendations.
3. Optional Hardware:
 1. Combination PVC step plate and lift handle.
 2. Flexible top weather strip for full width of door.
 3. Full height thermal break and anti-friction strip for galvanized end caps.
 4. Pusher Spring: For all medium and large size standard lift doors with manual chain hoist and for all doors with jackshaft type electric operators.
 5. Bumper Leaf Springs: For high lift and vertical lift door applications.
 6. Across the door bar latch: Complete with night lock with an outside cylinder and handle.
 7. Rollers: 51mm (2") white nylon tire, 11 ball bearings, zinc plated stem available in standard and long stem.
 8. Chain Hoist: Chain and sprocket type design.
 9. Spring Fail Safety Device: Designed to stop the door shaft, thus the free fall of the door in case of spring failure, available with or without interlock switch to disconnect power to the electric operator.

3.1 **FABRICATION**

1. Fabricate the work true to dimensions detailed and square, and to reviewed shop drawings, free from distortion and defects detrimental to the appearance and performance.

2. Ensure that Site dimensions are taken prior to the fabrication of the doors.
3. Door shall be 25 mm (1") higher than finished opening height and extend 25 mm (1") beyond jamb on either side of finished opening.
4. Use shop and field connections complying with CAN/CSA S16.1-M.
5. Accurately fit joints and intersecting members with adequate fastenings.

PART 3 – EXECUTION

3.2 EXAMINATION

1. The Trade shall, together with any and all other Trades involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
2. Prior to commencement of work of this Section, thoroughly examine location where door(s) and all other related components are to be installed. To ensure a satisfactory installation, the door installer must inspect the opening to ensure it is square and true, and that the floor is level to ensure proper seal at the floor.
3. Trades shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the Trade for correction prior to commencing the work of this section.
4. Commencement of the work of this section shall imply acceptance of all surfaces and conditions.
5. Proceed with installation only after unsatisfactory conditions have been corrected.
6. Verify that the opening sizes and tolerances are acceptable.
7. All door openings shall be completely prepared by the general contractor prior to the installation of the doors. Permanent or temporary electric wiring shall be brought to the door opening before installation is started and shall be completed so as not to delay the inspection test.

3.3 PREPARATION

1. Clean surfaces thoroughly prior to installation.

3.4 INSTALLATION

1. Install in accordance with manufacturer's installation instructions and recommendations along with approved submittals.
2. Coordinate with mechanical and electrical for any final connections.
3. Supply and install necessary appurtenances relating to door installation, required on door frames.
4. Dissimilar metals in contact or metals and masonry or concrete, when necessary to prevent corrosion, to be insulated one from another by methods and materials required for such results, as approved by the Consultant.
5. **Installation shall be by door manufacturer or by authorized manufacturer's representative for the region, as specified herein.**

6. Install doors, tracks and operating equipment complete with necessary hardware, weather-stripping, anchors, hangers, brackets and accessories, in accordance to manufacturer's printed instructions.
7. Assemble and erect work plumbs, true, square, straight, level and accurate as per Drawings and reviewed shop drawings.
8. Isolate metals where necessary to prevent corrosion due to contact with dissimilar metals and between metals, masonry and concrete. Use bituminous paint or butyl tape or as recommended by the door manufacturer.
9. Supply written instructions, drawings, and where necessary provide supervision for the installation of items to be built in by work of other Sections.
10. Steel member's etc. including jamb extensions and spring pads, by Division 5 and as per structural drawings. All other mounting brackets, angles etc., required for the proper installation of work of this Section, shall be the responsibility of the door manufacturer.
11. Complete installation must be to the satisfaction of the Consultant. Any and all aspects of installation adversely affecting appearance and/or performance of such installation shall be deemed unacceptable and shall be fully replaced at no additional cost to the Owner
12. DOOR:
 1. Complete installation must be to the satisfaction of the Consultant. Any and all aspects of installation adversely affecting appearance and/or performance of such installation shall be deemed unacceptable and shall be fully replaced at no additional cost to the Owner.
 2. Install sectional door in strict accordance with final reviewed shop drawings, manufacturer's instructions, qualified installer and as specified herein.
 3. Fit, align and adjust overhead door assemblies, level, plumb and square, to ensure smooth operation and to provide correct closure to the satisfaction of the Consultant and with all parts properly fastened and mounted.
 4. Ensure that complete installation includes tracks, operating equipment, necessary hardware, weather- stripping, anchors, hangers, brackets and any other accessories deemed necessary. Include any other items, not specified herein, but is required for a complete installation.
 5. Tension of springs shall hold door in open position without drifting downward or upward.
13. HARDWARE:
 1. Install all necessary hardware, jamb and head mold strips, anchors, inserts, hangers and equipment supports in accordance with final reviewed shop drawings, manufacturer's instructions and as specified herein.
 2. Mount counterbalancing mechanism with brackets at each end of shaft and at maximum 2438 mm (8'- 0") o/c. in between.
 3. Fasten vertical track assembly to opening frame at maximum 508 mm (1'-8") o/c. vertically. Install additional track anchors where deemed necessary by the Consultant.
 4. Support the horizontal track to transmit the door dead and operating loads to the building structure. Install sufficient supports, anchors, fasteners etc. so that the track assembly is rigid and free from undue movement as required by the door manufacturer and to the satisfaction of the Consultant. Install additional track anchors where deemed necessary

by the Consultant.

5. Provide bumper springs at the end of each track of manually operated doors.
6. Ensure weather-stripping properly fastened and it forms a continuous weather-tight seal at perimeter. Fit weather stripping snugly to doors so there is no rubbing action of weatherstripping until last moment contact. Make necessary adjustments until door is weathertight.

3.1 CLEAN-UP AND ADJUSTMENT

1. Clean in conformance with Division 1 General Requirements.
2. Clean exposed surfaces using methods acceptable to the manufacturer which will not damage finish.
3. Repair finishes damaged during installation, restore finishes so no evidence remains of corrective work.
4. All moving parts shall be tested and adjusted and left in good operating condition.
5. Lubrication:
 1. Upon completion of installation of doors and operating equipment, lubricate moving parts before operation.
 2. Grease sprockets, bearings, cables, link chains and guides. Lubricant shall be as recommended by the manufacturer.
 3. Do not over-lubricate components so as to cause staining or operational problems.
6. Demonstration:
 1. Test the door operation and adjust it for smooth operation, free from warp, twist or distortion. Demonstrate the operation to the satisfaction of the Consultant at the same time of acceptance of the completed work.
 2. Submit to the Owner a copy of proposed preventative maintenance program for overhead doors and other related components requiring regular maintenance and check-ups.

END OF SECTION

PART 1 – GENERAL

1.1 **SUMMARY**

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. Coordinate all locations shown on drawings and for all items located herein.
 2. All exterior vinyl or fibreglass opening infill locations.

1.2 **REFERENCES & QUALIFICATIONS**

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaw and the Ontario Ministry of Labour - all as currently amended.
2. Manufactured and pre-assembled windows and their installation shall conform to:
 1. AAMA/WDMA/CSA 101/I.S.2/A440 “NAFS – North American Fenestration Standard / Specification for Windows, Doors, and Skylights”
 2. CSA A440S1, “Canadian Supplement to AAMA/WDMA/CSA 101/I.S.2/A440 “NAFS – North American Fenestration Standard / Specification for Windows, Doors, and Skylights”
3. Performance grades for windows shall be selected according to CSA A440S1, “Canadian Supplement to AAMA/WDMA/CSA 101/I.S.2/A440-11 “NAFS – North American Fenestration Standard / Specification for Windows, Doors, and Skylights”
4. The minimum level of performance required for windows shall be that of the Performance Class R.
5. Resistance to forced entry to conform to Clause 5.3.5 of AAMA/WDMA/CSA 101/I.S.2/A440 “NAFS – North American Fenestration Standard / Specification for Windows, Doors, and Skylights”
6. Installation of windows shall conform to CAN/CSA-A440.4, “Window, Door, and Skylight Installation”

1.3 **SUBMITTALS**

1. Provide submittals in accordance with Section 01300 – Submittals.
2. **Product Data:** For all products specified herein, including product data, manufacturer's specifications and installation instructions.
3. **Shop Drawings:** Fabrication drawings shall be stamped by a Professional Engineer registered in the Province of Ontario, show all locations required.
 1. It is the responsibility of the approved manufacturers to meet or exceed and submit Ontario Building Code (OBC) SB-10 &/or SB-12 Energy Efficiency requirements in the systems that glass and glazing are installed. Coordinate with the OBC for all requirements. OBC matrix on drawings has the relevant SB-10 &/or SB-12 charts for some requirements.

Note: The above-mentioned submittal is to incorporate the manufacturers specified sealed glazing unit and each opening component as a whole.

2. Fabrication and installation of associated components of the work. Indicate anchors and fastening system and locations, frame joint system, thermal expansion provisions, operable sashes, types of operable sashes, opening degree of operable sash, screens, hardware, glazing, frame water / condensation weeps and other components as required.
3. Submit report from an independent testing laboratory indicating windows meet or exceed performance requirements of the Ontario building code (OBC) with respect to glass, resist the ingress of precipitation into the interior space, resist wind loads, resist wind pressures, control air leakage and infiltration, resist forced entry and are easily operable.
4. Shop drawings that are submitted are to be in the units of the tendered drawings with critical on center mullion and bottom / top / side mullion dimensions noted along with all other regular shop drawing dimensions. Metric units are mandatory, imperial in addition to metric is acceptable. Openings are to be identified with the corresponding tags on the tendered drawings.
5. Samples: N/A
6. Mock Ups: N/A

1.4 **MAINTENANCE DATA & MATERIALS**

1. Data: Provide maintenance data in Operation and Maintenance Manual.
2. Materials: -

1.5 **DELIVERY & STORAGE**

1. Delivery to the job site shall be coordinated by the General Contractor.
2. Store in a secure and dry location until installation can proceed.

1.6 **SPECIAL PROTECTION**

1. Provide adequate protection of materials and work of this Section from damage by on site storage, weather, construction activities and other causes.
2. Protect the work of other sections from damage resulting from work of this section. Make good such damage to the satisfaction of the Consultant.
3. Protect the work of this section from damage resulting from work of other sections. Make good such damage to the satisfaction of the Consultant.
4. Contractor to exercise protective treatment and other precautions required through the construction period, to ensure that items listed will be without damage or deterioration other than normal weathering and wear.
5. If items are damaged as noted above, items are to be replaced at contractor's expense

6. Mark each lite with a large cross to indicate the presence of glass. Use material that will leave no residue after removal, remove any residue if left behind.

PART 2 - PRODUCTS

2.1 MATERIALS

1. Operable Window: To match existing opening infills, operable sashes, insect screens, gypsum board returns on interior, operable aluminum hand crank, weather stripping.

1. Approved Manufacturers:

1. Jeld Wen Windows & Doors
2. Kolbe Windows & Doors
3. Pella
4. Anderson Windows & Doors
5. North Star Windows & Doors
6. Pollard Windows & Doors
7. Gentek Building Products
8. Or approved alternative

2.1 ACCESSORIES

1. Energy Performance:
Max. U-Value – 0.25 Btu/h·ft²·F (1.4 W/m²·K)
Max. SHGC – 0.45
2. Glass / Glazing: Manufacturer to verify glazing make up for energy efficiency requirements. Vision glazing, triple glazed hermetically sealed insulated glazing unit, min. 4 mm tempered panes, low 'E' coating (surface to be specified by Manufacturer to achieve performance rating), 90% argon gas 10% air fill, stainless steel / warm edge spacer.
3. Glazing Tape: As per manufacturer
4. Glazing Sealant: As per manufacturer
5. Setting Blocks: Neoprene, Shore "A" durometer hardness, 100mm (4") long x 6mm (1/4") high x width to suit glass thickness.
6. Spacer Shims: Neoprene, Shore "A" durometer hardness 80, 75mm (3") long x 2.4mm (0.08") thick and 9mm (3/8") high.
7. Backer Rod: As per Section 07900 Sealants & Caulking.
8. Sealant at Exterior Opening Perimeters: As per Section 07900 Sealants & Caulking.
9. Sealant at Interior Opening Perimeters: As per Section 07900 Sealants & Caulking.

PART 3 - EXECUTION

3.1 INSTALLATION

1. Install work in accordance with manufacturer's installation instructions, details on drawings, and with standards specified herein.

2. All opening infills shall be sealed to air barriers, air/vapour barriers and vapour barriers.
3. Secure work adequately and accurately to the structure in required position and in manner not restricting thermal movement. Work shall be plumb, square and level, free of twist, warp or other superimposed loads. Provide shims as required.
4. Neoprene shims to be used, wood shall not be used for shimming.
5. Provide all required expansion joints.
6. Use concealed fixings where possible, where not possible use flat head screws in countersunk holes. Exposed bolt or nut heads not permitted. Match exposed fastenings with surfaces on which they occur.
7. Fill shim voids solid between opening infill framing and adjacent sill, jamb and head framing substrates with spray foam insulation at exterior applications where required to prevent movement or infiltration of air. Fill shim voids solid with spray foam or batt insulation at interior locations for sound proofing / transmission. Supply and install spray-on insulation.
8. Supply all covers, clips, stiffeners, trims, sills, copings, special flashings, filler pieces, termination pieces, caps, closures, expansion joint covers as required to create a complete installation and as indicated on drawings.

3.1 CAULKING

1. Install continuous uniform caulking beads at all interior and exterior frame perimeters with except to drain; install backer rod where applicable.
2. Caulk in accordance with materials and procedures in Section 07900 and be installed by this Section.

3.2 ADJUST AND CLEAN

1. Adjust all hinges, closers, latches, weather stripping and other hardware for optimum operation and performance. Lubricate operating equipment as required by manufacturers recommendations and maintenance.
2. Install insect screens.
3. Clean surfaces promptly after installation, exercising care to avoid damage of any protective coating.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:** This Section specifies subsurface preparation requirements for areas to receive the installation of applied and resinous flooring. This Section includes removal of existing floor coverings, testing concrete for moisture and Ph, remedial floor coating for concrete floor slabs having unsatisfactory moisture or Ph conditions, floor leveling and repair as required.

1.2 REFERENCES & QUALIFICATIONS

1. Perform Work of this Section to meet the requirements of the following ASTM publications:

D638-10 (2010)	Test Method for Tensile Properties of Plastics
D4259-88 (2012)	Standard Practice for Abrading Concrete to alter the surface profile of the concrete and to remove foreign materials and weak surface laitance.
C109/C109M-12 (2012)	Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens) Modified Air Cure Only
D7234-12 (2012)	Standard Test Method for Pull-Off Adhesion Strength of Coatings on Concrete Using Portable Pull-Off Adhesion Testers.
E96/E96M -12 (2012)	Standard Test Methods for Water Vapor Transmission of Materials
F710-11(2011)	Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring
F1869-11 (2011)	Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride
F2170-11 (2011)	Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes
C348-08 (2008)	Standard Test Method for Flexural Strength of Hydraulic-Cement Mortars
C191-13 (2013)	Standard Test Method for Time of Setting of Hydraulic Cement by Vicat Needle

1.3 SUBMITTALS

1. Provide submittals in accordance with Section 01300 – Submittals.
2. Provide written approval confirming product compatibility with subfloor material manufacturer and flooring manufacturer.

3. Product Data:

1. Moisture remediation system
2. Underlayment primer
3. Cementitious self-leveling underlayment
4. Cementitious trowel-applied underlayment (not suitable for resinous floor finishes)

1.4 DELIVERY AND STORAGE

1. Deliver materials in containers with labels legible and intact and grade-seals unbroken.
2. Store material to prevent damage or contamination.

1.5 TESTING

1. Moisture test and pH results performed by a qualified independent testing agency or warranty holding manufacturer's technical representative.

PART 2 - PRODUCTS

2.1 MOISTURE REMEDIATION COATING:

1. System Descriptions:

1. High-solids, epoxy system designed to suppress excess moisture in concrete prior to an overlayment. For use under resinous products, VCT, tile and carpet where issues caused by moisture vapor are a concern.
2. Products: Subject to compliance with applicable fire, health, environmental, and safety requirements for storage, handling, installation, and clean up.
3. System Components: Verify specific requirements as systems vary by manufacturer. Verify build up layers and installation method. Verify compatibility with substrate. Use manufacturer's standard components, compatible with each other and as follows:
 1. Liquid applied coating:
 1. Resin: epoxy
 2. Formulation description: multiple component high solids
 3. Application: per manufacturer's written installation requirements
 4. Thickness: minimum 10 mils
4. Material Vapor Permeance: Application shall achieve a permeance rating of less than 0.1 perm in accordance with ASTM E96/E96M.
5. Maximum RH requirement: 100% testing in accordance with ASTM F2170.

Property	Test	Value
Tensile Strength	ASTM D638	4,400 psi
Volatile Organic Compound Limits (V.O.C.)	SCAMD Rule 1113	25 grams per liter
Permeance	ASTM E96	0.1 perms
Tensile Modulus	ASTM D638	1.9X10 ⁵ psi

Percent Elongation	ASTM D638	12%
Cure Rate	Per manufacture's Data	4 hours tack free with 24hr recoat window
Bond Strength	ASTM D7234	100% bond to concrete failure

1.2 **CEMENTITIOUS SELF-LEVELING UNDERLAYMENT:**

1. System Descriptions:

1. High performance self-leveling underlayment resurfacer: Single component, self-leveling, cementitious material designed for easy application as an underlayment for all types of flooring materials. It is used for substrate repair and leveling.
2. Products: Subject to compliance with applicable fire, health, environmental, and safety requirements for storage, handling, installation, and clean up. Gypsum-based products are unacceptable.

2. System Characteristics:

1. Wearing Surface: smooth
 1. Thickness: Per architectural drawings, ranging from feathered edge to 1", per application. Applications greater than 1" require additional 3/8" aggregate to mix or as recommended by manufacturer.
3. Underlayment shall be calcium aluminate cement-based, containing Portland cement. Gypsum-based products are unacceptable.
4. Compressive Strength: Minimum 4100 psi in 28 days in accordance with ASTM C109/C109M.
5. Flexural Strength: Minimum 1000 psi in 28 days in accordance with ASTM C348.
6. Dry Time: Underlayment shall receive the application of moisture insensitive tile in 6 hours, floor coverings in 16 hours, and resinous flooring in 3-7 days.
7. Primer: compatible and as recommended by manufacturer for use over intended substrate.
8. System Components: Manufacturer's standard components that are compatible with each other and as follows:
 1. Primer:
 1. Resin: copolymer
 2. Formulation Description: single component ready to use.
 3. Application Method: Squeegee and medium nap roller. All puddles shall be removed, and material shall be allowed to dry, 1-2 hours at 70F/21C.
 4. Number of Coats: (1) one.
 2. Grout Resurfacing Base:
 1. Formulation Description: Single component, cementitious self-leveling high-early and high-ultimate strength grout.

2. Application Method: colloidal mix pump, cam rake, spike roll.
 - i. Thickness of Coats: Per architectural scope, 1" lifts.
 - ii. Number of Coats: More than one if needed.
3. Aggregates: for applications greater than 1inch, require additional 3/8" aggregate to mix.

Property	Test	Value
Compressive Strength	ASTM C109/C109M	2,200 psi @ 24 hrs 3,000 psi @ 7 days
Initial set time Final Set time	ASTM C191	30-45 min. 1 to 1.5 hours
Bond Strength	ASTM D7234	100% bond to concrete failure

2.3 **CEMENTITIOUS TROWEL-APPLIED UNDERLAYMENT (NOT SUITABLE FOR RESINOUS FLOOR FINISHES)**

1. Underlayment shall be calcium aluminate cement-based, containing Portland cement. Gypsum-based products are unacceptable.
2. Compressive Strength: Minimum 4000 psi in 28 days
3. Trowel-applied underlayment shall not contain silica quartz (sand).
4. Dry Time: Underlayment shall receive the application of floor covering in 15-20 minutes.

PART 3 - EXECUTION

3.1 **ENVIRONMENTAL REQUIREMENTS**

1. Maintain ambient temperature of work areas at not less than 16 degree C (60 degrees F), without interruption, for not less than 24 hours before testing and not less than three days after testing.
2. Maintain higher temperatures for a longer period of time where required by manufacturer's recommendation.
3. Do not install materials when the temperatures of the substrate or materials are not within 60-85 degrees F/ 16-30 degrees C.

3.2 **SURFACE PREPARATION**

1. Existing concrete slabs with existing floor coverings:
 1. Conduct visual observation of existing floor covering for adhesion, water damage, alkaline deposits, and other defects.
 2. Remove existing floor covering and adhesives. Comply with local, state and federal regulations and the RFCI Recommended Work Practices for Removal of Resilient Floor Coverings, as applicable to the floor covering being removed.

2. Concrete shall meet the requirements of ASTM F710 and be sound, solid, clean, and free of all oil, grease, dirt, curing compounds, and any substance that might act as a bond-breaker before application. As required prepare slab by mechanical methods. No chemicals or solvents shall be used.
3. General: Prepare and clean substrates according to flooring manufacturer's written instructions for substrate indicated.
4. Prepare concrete substrates per ASTM D4259 as follows:
 1. Dry abrasive blasting.
 2. Wet abrasive blasting.
 3. Vacuum-assisted abrasive blasting.
 4. Centrifugal-shot abrasive blasting.
 5. Comply with manufacturer's written instructions.
5. Repair damaged and deteriorated concrete according to flooring manufacturer's written recommendations.
6. Verify that concrete substrates are dry.
7. Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with application only after substrates have maximum moisture-vapor-emission rate of per flooring manufacturer's formal and project specific written recommendation.
8. Perform in situ probe test, ASTM F2170. Proceed with application only after substrates do not exceed a maximum potential equilibrium relative humidity per flooring manufacturer's formal and project specific written recommendation.
9. Provide a written report showing test placement and results.
10. Prepare joints in accordance with 07900 – Sealants.
11. Alkalinity: Measure surface pH in accordance with procedures provided in ASTM F710 or as outlined by qualified testing agency or flooring manufacturer's technical representative.
12. Tolerances: Subsurface shall meet the flatness and levelness tolerance specified on drawings or recommended by the floor finish manufacturer. Tolerance shall also not to exceed 1/4" deviation in 10'. As required, install underlayment to achieve required tolerance.
13. Other Subsurface: For all other subsurface conditions, such as wood or metal, contact the floor finish or underlayment manufacturer, as appropriate, for proper preparation practices.

3.3 MOISTURE REMEDIATION COATING:

1. Where results of relative humidity testing (ASTM F2170) exceed the requirements of the specified flooring manufacturer, apply remedial coating as specified to correct excessive moisture condition.

2. Prior to remedial floor coating installation mechanically prepare the concrete surface to provide a concrete surface profile in accordance with ASTM D4259.
3. Mix and apply moisture remediation coating in accordance with manufacturer's instructions.

3.4 CEMENTITIOUS UNDERLAYMENT:

1. Install cementitious self-leveling underlayment as required to correct surface defects, floor flatness or levelness corrections to meet the tolerance requirements as or detailed on drawings, address non-moving cracks or joints, provide a smooth surface for the installation of floor covering / or meet elevation requirements detailed on drawings.
2. Mix and apply in accordance with manufacturer's instructions.

3.5 PROTECTION:

1. Prior to the installation of the finish flooring, the surface of the underlayment should be protected from abuse by other trades by the use of plywood, tempered hardwood, or other suitable protection course.

3.6 FIELD QUALITY CONTROL

1. Where specified, field sampling of products shall be conducted by a qualified, independent testing facility.

END OF SECTION

PART 1 – GENERAL

1.1 **SUMMARY**

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. Gypsum wallboard for walls, partitions, floors, roofs, ceilings, bulkheads, furred out walls, wall facings, wall infill (patch and repair), fire rated penetration infills and at all areas indicated on the drawings.
 2. Tile backer board for all shower / wet locations that are receiving tile finishes along with for washroom locations as noted and indicated.
 3. All walls to always extend to underside of floor or roofing deck. Coordinate with drawings for extension of gypsum finish to underside of roof sheathing for fire separations.
 4. Control joints.
 5. Access panels / doors (fire rated and non-fire rated) for access to all mechanical equipment (balancing damper, VAV's, etc.), plumbing equipment (Clean-outs), electrical equipment, etc. for required access in ceilings and walls.

1.2 **REFERENCES & QUALIFICATIONS**

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaw and the Ontario Ministry of Labour, Fire Marshal requirements - all as currently amended.
2. **Certificates:**
 1. Provide at completion of work a written certification that all drywall work where applicable conforms to the required ULC fire rated assemblies.
3. **Qualifications:**
 1. Contractor for this work to have a minimum of five years' experience in installation of wallboard.
4. **References: (All as currently amended)**
 1. Install work to CSA A82.31-M91, CGC Drywall Construction Handbook and the Manual of Gypsum Wallboard Construction by Gypsum Drywall Contractor's International except where specified otherwise.

1.3 **SUBMITTALS**

1. Provide submittals in accordance with Section 01300 – Submittals.
2. **Product Data:**
 1. For all products specified herein, including product data, manufacturer's specifications, storage and handling requirements and recommendations, preparation and installation instructions, adjustment and alignment procedures.

2. Shop Drawings:

1. Shop drawings shall be submitted by the specified manufacturer only.
 2. Before shop drawings and fabrication is started, take critical measurements at the site to facilitate installation and fitting of work.
 3. Shop drawings shall be of best quality craftsmanship, incorporating specific job details not generic details.
 4. Shop drawings that are submitted are to be in the units of the tendered drawings, metric is mandatory with imperial as additional alternate is acceptable.
 5. Submit shop drawings showing control joints for the Consultant's approval.
 6. Submit shop drawings showing locations and sizings of all access panels / doors in gypsum board ceilings and walls for access to all mechanical, plumbing and electrical equipment.
7. Samples: Submit sample of each type of casing bead, corner bead, controljoints, reveal moulding, etc
8. Mock Ups: N/A

1.1 MAINTENANCE DATA & MATERIALS

1. Data: N/A
2. Materials: N/A

1.4 ALLOWANCES

1. Include in base bid quote for an additional 10 sq. metres of gypsum wallboard complete with metal furring and finished taping for addition furred in pipes at walls or ceilings. Locations as per required by the Consultant.

1.5 DELIVERY & STORAGE

1. Delivery to the job site shall be coordinated by the General Contractor.
2. Store in manufacturers unopened packing in a secure, dry and warm, protected with adequate ventilation, free from dust and water location in accordance with manufacturer's printed directions / instructions until installation can proceed. Inspect product upon receipt and report damaged material immediately to delivering carrier and note such damage on the carrier's freight bill of lading.
3. All items to be packaged and labelled with description of contents along with numbering or nomenclature used on shop drawings and bearing brand and manufacturer's name.
4. Handle materials carefully to prevent damage.
5. Keep products from freezing.
6. Store flat, in piles without overhanging boards.
7. Do not install damaged or deteriorated material but remove from site.

8. Materials as delivered shall bear the manufacturer's name, branch, name of material and where applicable, CAN/CSA classification.

1.2 SPECIAL PROTECTION

1. Provide adequate protection of materials and work of this Section from damage by on site storage, weather, construction activities and other causes.
2. All patching and repair due to damage by other trades, shall be performed under this section and paid for by the trade responsible for the damage.
3. Protect the work of other sections from damage resulting from work of this section and protect the work of this section from damage resulting from work of other sections. Make good such damage to the satisfaction of the Consultant.
4. Contractor to exercise protective treatment and other precautions required through the construction period, to ensure that items listed will be without damage or deterioration other than normal weathering and wear.
5. If items are damaged / soiled as noted above, items are to be replaced / repaired at contractor's expense, not extra cost to the contract.
6. Consult with section of work soiled before cleaning to ensure methods used will not damage their work.

1.3 WARRANTY

1. The work and materials of this section shall be warrantied in accordance with GC 12.3 of CCDC Document 2 and SC 3.44 of the City of Brantford's Supplementary Conditions, most current issuance.

1.4 SEQUENCING & SCHEDULING

1. Ensure all work is installed and completed that will be concealed by this work.
2. The Contractor shall cooperate in the coordination and scheduling of the product to avoid delays in job progress.

1.5 PROJECT SITE CONDITIONS (ENVIRONMENTAL CONDITIONS)

1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
2. Air and surface temperature: Minimum 54 F (12 C) and maximum 77 F (25 C) for 24 hours before, during and until entire installation is complete.
3. Ensure proper ventilation, during and following joint treatment, to eliminate excessive moisture.
4. Commencement of work will denote acceptance of conditions.

1.6 TESTING

1. N/A

PART 2 - PRODUCTS

2.1 MANUFACTURERS

1. Specification is generally based on Canadian Gypsum Co. Ltd. (CGC / USG) material but equivalent materials by other manufacturers are acceptable when approved – coordinate with ULC ratings where applicable for specific manufacturers.

2.1 MATERIALS

1. Gypsum Board:

1. Fire Rated (Fire Resistance Rating): CGC Sheetrock Brand Panels Firecode Type 'X' and / or Type 'C', or approved alternative.

1. Thickness - 12.7mm (1/2"), 15.9mm (5/8"), and 25.4mm (1") thickness.

Note: Coordinate with Wall / Floor / Roof / Ceiling Types where SB-2, SB-3, ULC, and Shaft Wall Design requirements for the listed Design gypsum board requirements which governs the above noted gypsum board type and manufacturer where applicable.

2. Non-Fire Rated (No Fire Resistance Rating): CGC Sheetrock Brand Gypsum Panels, or approved alternative.

1. Thickness - 12.7mm (1/2") thickness.

Note: Coordinate with Wall / Floor / Roof / Ceiling Types and accompanying Typical Notes for thickness.

3. Mould and Moisture Resistant: CGC Sheetrock Brand Mould and Moisture Resistant Glass Mat faced (paperless) Gypsum Panels (wall and ceiling locations in all washrooms and all other moist / wet areas). Fire rated where required. Or approved alternative.

1. Thickness - 12.7mm (1/2"), 15.9mm (5/8"), and 25.4mm (1") thickness.

Note: Coordinate with Wall / Floor / Roof / Ceiling Types and accompanying Typical Notes for thickness.

4. Use board with round or tapered edges where mudding and taping is to be undertaken, square butt edges where required by SB-2, SB-3, ULC and Shaft Wall designs and details.

2. Tile Backer Board: Dens-Shield Tile Backer Board by Georgia-Pacific Corporation, or approved alternative. Locations at showers (walls and ceilings) receiving a tile finish. Tile backer board is to be installed over gypsum board required at any fire rated assemblies. Tile Backer Board is not required on masonry wall substrates unless noted otherwise on drawings.

1. Thickness - 12.7mm (1/2") and 15.9mm (5/8") thickness.

Note: Coordinate with Wall / Floor / Roof / Ceiling Types, details and accompanying Typical Notes for thickness.

2. Use board with round or tapered edges where mudding and taping is to be undertaken.

2.2 **ACCESSORIES**

1. Screws: CGC Brand Screws Type S. 25mm (1") and 38mm (1 ½") as required to CSA A82.31-M1980, or approved alternative. For exterior Sheathing and tile backer board use 1 1/4" Bugle head fine thread rust resistant drillpoint drywall screw (type S-12).

Note: Coordinate with SB-2, SB-3, ULC, and Shaft Wall Design requirements for the listed Design screw requirements which governs the above noted screw type where applicable.
2. All Metal Trim Accessories: 24 gauge (0.5mm) base thickness commercial grade sheet steel with G90 zinc finish to ASTM A525-80A; perforated flanges; one-piece length per location.
 1. Corner Beads: CGC Sheetrock Brand Paper-Faced Metal Drywall Beads and Trims, interior and exterior corner applications, angle degree to match wall junction angles, or approved alternative.
 2. 'J' Closures: CGC Sheetrock Brand Paper-Faced Metal Trims, J Shape, or approved alternative.
3. Joint Treatment Material Compound:
 1. Gypsum Board:
 1. Setting Type Joint: CGC Durabond 90 Brand Setting-Type Joint Compound, or approved alternative.
 2. Joint Topping: CGC Sheetrock Brand "All-Purpose Drywall Compound" and other CGC joint topping compounds to ASTM 0474 and 0475, or approved alternative. Material shall be pre-mixed, ready to use, in sealed containers.
 3. Tile Backer Board: Thin set mortar mixed with acrylic latex.
4. Reinforcing Tape:
 1. Gypsum Board: CGC Drywall Joint Tape, 50mm (2") wide, or approved alternative.
 2. Tile Backer Board: CGC / USG Durock Brand Tile Backer Tape, 50mm (2") wide, alkali resistant fibreglass tape, or approved alternative. Screws to be self-taping (for metal studs) and rust resistant.
5. Control Joint:
 1. Non Fire Rated: CGC Control joint No. 093 vinyl, or approved alternative.
 2. Fire Rated: CGC Control joint No. 093 zinc, install gypsum board in framing cavity behind control joint, and as detailed, or approved alternative.
6. Acoustic Caulking: Acoustical sealant by Tremco or approved equal to CGSB 19-GP-21M, or approved alternative.
 1. Locations: Underside sill plates, top of top plates, both sides of top plates and sill plates of wall (non-rated) at gypsum board terminations and as per other non-rated locations as shown on drawings.
7. Adhesive: CGC Durabond 90 Brand Setting-Type Joint Compound, or approved alternative.
8. Stud adhesive: to C.G.S.B. 71 GP-25M.

9. Thermal Break: Permanent adhesive faced rubberized cork, 1/8" (3 mm) thick by width required.
10. Access Panels: Access panels to be sufficient size for maintenance access purposes required:
 1. Non-Fire Rated, non-insulated (walls and ceilings):
 1. DW-5015 access door by Acudor Access Doors, or approved alternative.
 2. Access Panel Sizings:
 1. Walls:
 1. 610mm x 914mm (2'x3') (610mm x 450mm min.) where personnel must pass through. Otherwise provide 300mm x 300mm (1'x1') minimum unless noted below.
 2. 400mm x 400mm (16"x16") for 400mm stud spacing.
 3. 300mm x 300mm (1'x1') for 300mm stud spacing.
 4. All sizing to be verified by Consultant(s).
 2. Ceilings:
 1. 610mm x 914mm (2'x3') (610mm x 450mm min.) where personnel must pass through. Otherwise provide 300mm x 300mm (1'x1') minimum unless noted below.
 2. 610mm x 914mm (2'x3') (610mm x 450mm min.) for VAV's.
 3. 610mm x 610mm (2'x2') (610mm x 450mm min.) for clean outs.
 4. 300mm x 300mm (1'x1') for valves and balancing dampers.
 5. All sizing to be verified by Consultant(s).

PART 3 - EXECUTION

3.1 EXAMINATION

1. The Trade shall, together with any and all other Trades involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
2. Trades shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the Trade for correction prior to commencing the work of this section.
3. Commencement of the work of this section shall imply acceptance of all surfaces and conditions.
4. Proceed with installation only after unsatisfactory conditions have been corrected.
5. Verify that the opening sizes and tolerances are acceptable.

3.1 PREPARATION

1. Clean surfaces thoroughly prior to installation.

3.2 INSTALLATION

1. Install in accordance with manufacturer's installation instructions and recommendations along with approved submittals.

2. General:

1. Do not install gypsum board until work of other Trades which will be covered by the board has been installed and approved.
2. Use board of maximum practical length to reduce number of end joints. Install control joints in long runs of board.
3. Fit ends and edges closely, but do not force together.
4. Attach board to framing using screws, not nails.

3. Installation on Stud Framing:

1. Install board vertically or horizontally whichever results in fewer end joints, use longest possible lengths. Cut and fit boards around openings, beams, joists, ducts, light fixtures and similar items. Install board up to underside of slab or metal deck above to provide sound insulated walls and fire separations.
2. Minimize gypsum board joints over openings. Use one-piece application to span over opening width where board lengths allow. There is to be no board joint directly over / above edge condition of opening.
3. Position edges over supports for vertical or horizontal application.
4. For single layer vertical application space screws 12" (300 mm) o.c. for field of panel and 6" (150 mm) o.c. staggered, along vertical abutting edges. For horizontal application space screws 12" (300 mm) o.c. in field and 8" (200 mm) and along abutting end joints. For double layer application, stagger joints in second layer of boards, a minimum of one-stud spacing in both directions and fasten with screws as before. Coordinate with SB-2 resilient channel installation requirements and all other ULC or SB-2 fastening requirements.

4. Installation on Ceiling:

1. Install board with long dimension at right angles to furring channels.
2. Position end joints over channel flange and stagger in adjacent rows.
3. Fasten board to channels with 1" (25 mm) type S screws spaced 12" (300 mm) o.c. in field of panels and 8" (200 mm) along abutting edges. Coordinate with SB-2 resilient channel installation requirements and all other ULC or SB-2 fastening requirements.
4. Install board continuously above ceiling at exterior walls to support vapour barrier where it occurs.

3.3 FIREPROOFING

1. All firestop sealants and backup mineral wool by Section 07270 - Firestopping and Smoke Seals.
2. Gypsum board to extend behind all recessed fixtures, equipment, receptacles, panels, etc. for required fire resistance rating. Coordinate with life safety drawings for fire resistance ratings.

3.4 **ACCESSORIES**

1. Erect accessories straight, plumb or level, rigid and at proper plane. Use full length pieces where practical. Make joints tight, accurately aligned and rigidly secured. Mitre and fit corners accurately, free from rough edges. Secure at 6" (160 mm) o.c. for full length.
2. Install "J" molds around perimeter of suspended ceilings.
3. Install "J" molds where gypsum board butts against surfaces having no trim concealing junction and where indicated.
4. Install heavy duty steel corner beads at all exposed corners.

3.5 **CONTROL JOINTS**

1. Construct control joints set in gypsum board facing and supported independently on both sides of joint.
2. Provide shrinkage control joints in accordance to the best standard practice to meet the approval of the Consultant and as noted on drawings.
3. Install framing members on both sides of control joint, not to share a framing member.
4. Locate control joints at changes in substrate construction.
5. 9m (30') maximum in either direction.
6. 15m (50') maximum in either direction ceilings with perimeter relief. Install control joints (caulking & backer rod) at all gyp. bd. ceiling per.'s
7. 9m (30') maximum in either direction ceilings without perimeter relief
8. Install control joints straight and true.
9. Install additional control joints as directed on site by the Consultant and as the subcontractor recommends to eliminate future drywall problems.

3.6 **ACCESS PANELS**

1. Coordinate with life safety drawings and OBC matrix for all fire resistance rating requirements of assemblies access panels are installed in.
2. Coordinate with Architectural drawings for locations (not all shown), Mechanical and Electrical drawings for all remaining locations of equipment that requires access.
3. Ceiling / bulkhead access panels to be installed below all mechanical (balancing dampers, VAV's, etc.) and plumbing equipment (Clean outs, valves, etc.) and electrical equipment concealed behind gypsum board that needs maintenance access and as noted on drawings.
4. Wall access panels to be installed in front of all mechanical, plumbing (Clean outs, valves, etc.), electrical equipment and other items of concealed behind gypsum board that needs maintenance access and as noted on drawings.
5. Provide "J" molds at exposed drywall edges of panel and at ceiling opening where access door does not have an edge.
6. Install access panels at wall locations provided by Divisions 15 and 16.

7. Rigidly secure frames to furring or framing systems, install all blocking, framing, suspension framing as required.

3.7 **THERMAL BREAK**

1. Provide a continuous moisture resistant insulating material at edges of gypsum wallboard in contact with aluminum windows and exterior door frames to provide a thermal break; or leave a 5mm space that a continuous caulking bead will cover.

3.8 **ACOUSTICAL MATERIALS**

1. Install a continuous double row of caulking beads around perimeter of partitions which are indicated as containing sound attenuation batts.
2. Install sound attenuation batts in partitions where shown, with air space consistently on one side. Continue batts behind electrical boxes and conduits and all other services and items installed in partitions.
3. Provide caulking around all ducts, pipes, conduits and other items passing through partitions
4. Caulk all openings in wall and through base and ceiling plates for plumbing.
5. Electrical Outlets: cut holes neatly to reduce leaks. Caulk it tight around outlets before plate is installed. Do same for wall mounted fixture outlets before fixtures installed.
6. Bring early to General Contractor's attention that no electrical outlets are to be back to back in sound control walls. Consult Electrical Engineer.
7. Caulk edge of drywall to studs at perimeter of wall with 2 beads of caulking.
8. Installation of acoustical walls shall be from floor to bottom of floor above (not ceiling height) and sealed at all perimeters (including voids in metal deck).

3.9 **SEALANTS**

1. Type A: Use at all interior control joints and expansion joints. NOTE: this sealant must not be painted over.

3.10 **FINISHING**

1. Mix joint compound (powder) in accordance with manufacturer's printed instructions.
2. Prefill "V" grooves of rounded edges with setting type joint treatment material compound. Finish flush with tapered surface ready for reinforcing tape application. Allow pre-fill material to dry thoroughly before application of embedding compound and tape.
3. Apply setting bed of joint finishing joint material compound in thin uniform layer; embed reinforcing tape accurately centred on joint, securely pressed in, leaving sufficient compound under tape to provide proper bond. Immediately apply skim coat over tape application. Allow to dry thoroughly before application of next finishing joint material compound coats.
4. Apply filler joint finishing joint material compound such that the tapered gypsum board depression is flush with board surfaces. Allow to dry thoroughly before application of finish coat.

5. Apply finish coat of joint finishing joint material compound extending slightly beyond the previous coats and feathered out onto the board surface.
6. Sand between coats and following the finish coat, where necessary, and leave surface smooth and ready for painting.
7. Finish screw depressions with filler material and finish coat as specified in 4. and 5. above.
8. Joint and depression finish shall in no case protrude beyond the plane of the board surface.
9. Finish corner beads and metal trim flush with board surface using filler and finishing coats feathered out approximately 50mm (2") and 100mm (4") respectively onto the board surface to ensure that metal visible only at arris.
10. Fill and tape joints and internal corners and fill screw depressions in board face and smooth out along corner beads and metal trim with joint compound.
11. Provide specified metal trim and control joints at exposed edges, at junctions of drywall with dissimilar material, at control joints and at junction with columns. Fasten with screws at 300mm (12") on center along entire length.
12. Cut out a 'V' at all gypsum board butt joints and install setting type joint treatment material compound then complete with filler and finish coats.
13. Avoid sanding adjacent paper surface of boards.
14. Gypsum board wall / partition joints are to be taped and mudded full height of assembly including above all finished ceiling systems, sanding is not required above ceilings.
15. There are to be no holes / voids in any finished / unfinished wall systems including around all penetrations, etc.; full height of assembly, above or below finished ceilings.

3.11 INSTALLATION OF TILE BACKER BOARD TO SHOWER CEILINGS (walls similar)

1. Suspend with galvanized 1/4" (6.3 mm) dia. steel wire 1 1/2" (38 mm) x 3 5/8" (92 mm) 20 ga. galvanized steel studs at 300 mm on centre.
2. Use maximum length panels. Stagger intermediate end joints of adjacent lengths. Butt ends and edges. Secure tile backer board to studs with grabber type, 1 1/4" (32 mm) galvanized self tapping screws at 6" (150 mm) on centre complete with a fosco fastener. Edge screws shall be 1" (25 mm) away from other board.
3. Gap between board panels to be filled with thin set mortar mixed with acrylic latex. Embed 2" (50 mm) wide, alkali resistant fibreglass tape into thin set mortar.
4. Locate control joints and expansion joints at same locations as substrate, and at a maximum 20'-0" (6000 mm) centres.
5. Waterproof membrane over tile backer board by Section 09300.

3.12 CLEAN-UP

1. Clean in conformance with Division 1 General Requirements.
2. Clean exposed surfaces using methods acceptable to the manufacturer which will not damage finish.

3. Repair finishes damaged during installation, restore finishes so no evidence remains of corrective work
4. Clean thoroughly and remove all excess materials from other surfaces.
5. Remove all excess materials as job proceeds and at completion.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. Coordinate all locations shown on drawings and for all items located herein.
 2. Provide porcelain and ceramic tile for floors and walls, washrooms and kitchen / kitchenette, and as indicated on the drawings.

1.2 REFERENCES & QUALIFICATIONS

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaw and the Ontario Ministry of Labour - all as currently amended.
2. References: (All as currently amended)
 1. Do tile work to Installation Manual 2000 "Quarry Tile and Ceramic Tile", produced by Terrazzo Tile and Marble Association of Canada (TTMAC), or approved alternative, except where specified otherwise.
 2. Slip Resistance DIN 51130/61097
 3. Dynamic Coefficient of Friction ASTM C-1028

1.3 SUBMITTALS

2. Provide submittals in accordance with Section 01300 – Submittals.
3. Product Data:
 1. For all products specified herein, including product data, manufacturer's specifications, storage and handling requirements and recommendations, preparation and installation instructions, adjustment and alignment procedures and any special procedures.
2. Shop Drawings:
 1. Shop drawings shall be submitted by the specified manufacturer only.
 2. Before shop drawings and fabrication is started, take critical measurements at the site to facilitate installation and fitting of work.
 3. Where field measurements cannot be made without delaying the work, guarantee dimensions and proceed with fabrication corresponding to the established dimensions.
 4. Shop drawings shall be of best quality craftsmanship, incorporating specific job details not generic details.

5. Shop drawings that are submitted are to be in the units of the tendered drawings, metric is mandatory with imperial as additional alternate is acceptable.
6. Show all locations required, expansion joints and control joints along with relation to subfloor control joints, termination details, transition strips, etc. Indicate layout, size and description of components, pattern layouts, seam locations, base material, surface finish, and all other pertinent data and information, along with any other requirements requested by the Consultant.
7. No fabrication and or installation shall commence until all shop drawings have been approved. Materials / products that have been installed on site that are not approved / reviewed / as specified, will be removed.
8. Materials / products that are not submitted by the subtrade, will be submitted and supplied by the contractor and installed by the subtrade.
9. Samples:
 1. For all products specified herein.
 2. Colours and textures and patterns: as selected by the Owner to be accompanied with a hardcopy colour chart and physical full-size sample for tiles, base, transition strips, etc.; in each colour or design to be used for selection or as selected and noted below.
10. Mock Ups: N/A

1.4 MAINTENANCE DATA & MATERIALS

1. Data: Provide maintenance data for tile work.
2. Materials: Provide minimum, 2% of each type and colour of porcelain and ceramic tile required for project maintenance use. Store where directed. Maintenance material to be of same production run as installed material.

1.5 ALLOWANCES

1. N/A

1.6 DELIVERY & STORAGE

1. Arrange for early deliveries necessary for execution of work without delay and have materials on job well in advance of the time it is needed to avoid construction delays.
2. Deliver, store and handle materials to exclude foreign material and prevent damage, soiling or breakage.
3. Delivery to the job site shall be coordinated by the General Contractor.
4. Materials stored on site which need to be protected from weather shall be so protected.
5. Store in manufacturers unopened packing labelled with description of contents along with numbering or nomenclature used on shop drawings and bearing brand and manufacturer's name in a secure, dry and warm, protected with adequate ventilation, free from dust and water location in accordance with manufacturer's printed directions / instructions until installation can proceed. Inspect product upon receipt and report damaged material immediately to delivering carrier and note such damage on the carrier's freight bill of lading.

6. Keep products from freezing.
7. Each item is to be individually wrapped in protective crating or packaging complete with all fittings and accessories as required.
8. Storage of any material on or off the site is the responsibility of the contractor.
9. Deliver materials in original containers with manufacturer's seals and labels intact. Maintain temperature of storage area at 70°F (21°C) for 48 hours prior to installation.

1.7 SPECIAL PROTECTION

1. Provide adequate protection of materials and work of this Section from damage by on site storage, weather, construction activities and other causes.
2. Protect the work of other sections from damage resulting from work of this section and protect the work of this section from damage resulting from work of other sections. Make good such damage to the satisfaction of the Consultant.
3. Contractor to exercise protective treatment and other precautions required through the construction period, to ensure that items listed will be without damage or deterioration other than normal weathering and wear.
4. If items are damaged / soiled as noted above, items are to be replaced / repaired at contractor's expense, not extra cost to the contract.
5. Consult with section of work soiled before cleaning to ensure methods used will not damage their work.
6. All patching and repair due to damage by other trades, shall be performed under this section and paid for by the trade responsible for the damage.
7. General Contractor's Responsibility: In each location immediately following installation, protect new floors, if work is to be done after flooring installed with heavy cotton reinforced paper or polyethylene taped at joints and maintain in place until the Consultant gives instructions for the removal of temporary protection. Work shall be handed over to the Owner free of blemishes and in perfect condition.

1.8 WARRANTY

1. The work and materials of this section shall be warrantied in accordance with GC 12.3 of CCDC Document 2 and SC 3.44 of the City of Brantford's Supplementary Conditions, most current issuance.

1.9 SEQUENCING & SCHEDULING

1. Ensure all work is installed and completed that will be concealed by this work.
2. The Contractor shall cooperate in the coordination and scheduling of the product to avoid delays in job progress.
3. Coordinate the Work of this Section with the work of all other Sections in accordance with the General Instructions.

1.10 **PROJECT SITE CONDITIONS (ENVIRONMENTAL CONDITIONS)**

1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
2. Air temperature and structural base temperature at porcelain tile and ceramic installation area must be above 54°F (12°C) for 48 hours before, during and 48 hours after installation.

1.11 **ASSEMBLY**

1. All installation assemblies will compose of materials from the same manufacturer and be completely compatible. The completed assembly will pass the service requirements "Extra Heavy Duty" (Passing ASTM C627 - Cycles 1 through 14) as described in the TTMAC Specification Guide and TCA Handbook (Page 10).

PART 2 - PRODUCTS

2.1 **MATERIALS**

1. Tile: Conforming to CGSB 75-GP-1A.
2. Colours: Indicated for ceramic, porcelain and glass tiles for tending purposes. Final colour selection to be confirmed by the Consultant prior to installation.

NOTE: Provide round edge, round edge both sides, cove base, nosing's and tiles to do all work as per drawings and as required.

3. Porcelain Tiles (coordinate with interior finish schedule):
 1. PT1 - Floor Tile (Shower): Equal to Centura "Europa" Series, 50mm x 50mm (2" x 2") unglazed mosaic (on 12" x 12" sheets), colour to be Slate Grey (MBU2214). Provide TEC 927 Light Pewter grout. Or approved alternative.
 2. PT2 - Wall Tile (Shower): Equal to Centura "Ral-Vision" Series, 305mm x 102mm (12" x 4"), offset vertical stacked (coordinate with interior finish schedule), colour to be Light Grey Matte (K794223). Base to be of same wall tile. Provide TEC 908 Dove Gray grout. Or approved alternative.

2.2 **ACCESSORIES**

1. Mortar Beds:
 1. For Walls: 1-part Portland Cement: 1/5 to 1/2 parts hydrated lime, 4 parts sand; gauged with Custom - Flex latex by Custom Building Products as per manufacturer's directions. All Custom Building Products are distributed by Brolain Distributors Ltd. 519-740-9311. Approved equal manufacturer is TEC or other approved alternative.
 2. For Floors: 1-part Portland Cement: 4 parts sand; gauged with Custom - Flex latex by Custom Building Products as per manufacturer's directions. Approved equal manufacturer is TEC or other approved alternative.
 3. Thin Set Mortar: Master Blend Thin-Set Mortar gauged with Custom-Flex latex by Custom Building Products as per manufacturers' directions. Approved equal manufacturer is TEC or other approved alternative.

2. Grout and Joint Fillers:
 1. Porcelain Tile Grout and Joint Filler: Classic-Blend Grout by Custom Building Products floor grout and joint filler mixed with Custom's Acrylic Mortar Admix grout as per manufacturer's directions in colours as selected by the Consultant. Approved equal manufacturer is TEC or other approved alternative.
 2. Ceramic Tile Grout and Joint Filler: Custom 100% Solids epoxy by Custom Building Products grout system. Approved equal manufacturer is TEC or other approved alternative.
3. Caulking:
 1. Coordinate with Section 07900 Sealants.
4. Transition Strips / Terminations (PT): Add the following transition strip(s) types by Schluter (unless noted otherwise) for the following locations, height of transition strips to suit tile thickness.
 1. PT to Resilient and Sheet and Rubber Floor: Reno-V, AE satin anodized aluminum finish.
 2. End of PT (exposed end conditions): Jolly, AE satin anodized aluminum finish, thickness to suit tile.
 3. Corner of PT to PT (exposed corner conditions): Finec, AE satin anodized aluminum finish, thickness to suit tile. Tiles to be cut on 45-degree miter.
5. Waterproof membrane system at showers:
 1. Waterproof membrane shall be Laticrete liquid applied waterproof Membrane 9235 by Laticrete and rot-proof, hi-tensile cloth specifically treated for use with Laticrete Waterproofing as manufactured by Laticrete International Inc. and distributed by Ceratec Inc., Weston, Ontario (416) 743-5514. Approved equal is Schluter Kerdi matting system distributed by Centura and installed as per Schluter printed installation instructions, along with Schluter Kerdi-Board pre-fabricated curb systems, barrier free curb system can be mortared bed. Or other approved alternative.
 2. Finished membrane application shall meet the following requirements:
 1. Thickness: 0.02" (20 mils) min.
 2. Water Permeability: Nil
 3. Service Temperatures: -20 deg. F. to +180 deg. F.
-23 deg. C to + 82 deg. C.
 4. Tensile Strength: 415 lbs. per lineal in. (74 kg/cm)
 3. The membrane shall be resistant to urine, sugar, brine and milk waste products.
 4. Where waterproof membrane is installed, tile is to be installed using Laticrete 4237 Latex thin set method and Laticrete latapoxy S.P. 100 stainless epoxy grout or approved alternative.

6. Wire mesh reinforcing at showers:
 1. 51 mm x 51 mm x 1.6 mm – 16ga. (2" x 2") galvanized wire mesh reinforcing.
7. Floor sealer and protective coating:
 1. Aqua Mix Penetrating Sealer by Aqua Mix Inc, or approved alternative.
8. Cleaner:
 1. Aqua Mix Miracle Cleaner by Aqua Mix Inc. or as recommended by tile and grout manufacturers, or approved alternative.

PART 3 – EXECUTION

3.1 EXAMINATION

1. Beginning of installation means acceptance of existing surfaces and substrate. If substrate preparation is the responsibility of another installer, notify Contractor and the Consultant of unsatisfactory preparation before proceeding. Do not proceed until unsatisfactory conditions are corrected.
2. Examine substrates before commencing work to ensure they are satisfactory. Defective work resulting from installation on unsatisfactory surfaces will be considered the responsibility of those performing the work of this section.

3.2 PREPARATION

1. Clean surfaces thoroughly prior to installation.
2. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

1. Install in accordance with manufacturer's installation instructions and recommendations along with approved submittals.
2. Coordinate with mechanical and electrical for any final connections.

3.4 WORKMANSHIP

1. Regard recommendations, installation methods specified and illustrated in Terrazzo, Tile and Marble Association Manual No. 2000, and applicable manufacturer's instructions as minimum acceptable standard accept as varied by this Specification.
2. Fit tile units around corners, fittings, fixtures, drains and other built-in objects to maintain uniform joint appearance. Make cut edges smooth, even and free from chipping. Edges resulting from splitting not acceptable.
3. Maximum surface tolerance 1:800.
4. Make joints between tiles uniform. Tile joints shall be approximately 1/8" (3 mm) wide, for ceramic tiles and 1/4" (6 mm) wide for porcelain tile, plumb, straight, true, even and with adjacent units flush. Align patterns.

5. Drill holes for fixing accessories of other trades.
6. Finish surfaces flat and level (ensure leveler is used to accomplish this) or sloped and graded to drain where floor drains occur.
7. Sound tiles after setting and replace hollow sounding units to obtain full bond.
8. Make internal angles square, external angles bull nosed.
9. Install transition strips at junction of tile flooring and dissimilar material. Where transition occurs in a doorway, transition strip to be below door.
10. Clean installed tile surfaces progressively as work proceeds. Do not allow mortar to stain absorbent tile. Do not use acids for cleaning. Seal in accordance with manufacturer's approved products.
11. Layout borders, defined lines, accent patterns and bands wherever they occur prior to setting tile. Keep inner edges of borders against fields or wall panels straight.
12. Install base trim, control joints, and beveled reducing strips as per manufacturer's instructions.

3.5 EXPANSION AND CONTROL JOINTS

1. Control joints to be located directly on block control joints and concrete floor control joints and expansion joints.
2. Control joints are also to be placed where tile abuts other hard materials.
3. Install control joints in tile floors at 10'-0" (3050 mm) max. o/c and at 20'-0" (6100 mm) max o/c at wall locations. Align joints at concrete floor and masonry control joint locations as well.
4. Allow for control joints at the perimeter junction to all walls, around all columns.
5. Submit shop drawings to indicate layout of control joints. Porcelain tile control joints shall occur directly above a concrete floor control joint therefore minimizing the cutting of porcelain tile.
6. The approved control joint shop drawing layout shall be marked onto the concrete floor slabs by the porcelain tile contractor and the actual cutting of the control joints in the concrete floor slab shall be done by the concrete floor finisher.
7. It is the responsibility of the porcelain tile contractor and the concrete floor finisher to coordinate through the project manager the exact location of floor control joints.
8. At expansion joint locations install back to back metal transition strips at each side of joint then caulk between.

3.6 PORCELAIN TILE

1. Refer to TTMAC Specifications and Detail No. 311F-2000 Detail A, thin set method of porcelain tile floor to concrete slab, and Detail No. 303W-2000 thin set method of porcelain tile base to wall, or specifications of approved alternative.

2. Install tile using thin set mortar, in accordance with manufacturer's instructions.
3. Provide levelling coat where required to achieve a level sub-floor prior to installation. Existing wood sub-floors may require additional plywood flooring coverage and shimming to achieve this, install as required.
4. Provide leveling coat at all wall tile locations.
5. Wall to wall, floor to wall, wall to ceiling tiles should not touch to stop transfer of noise and vibrations from one plane to the other, all joints are to be caulked (wall tile should start above floor tile with caulking space typical).
6. Porcelain tile base to be installed on first course of block without rounded corners (i.e. square). Block to be ground above base to match radius of block courses above first course.
7. Install porcelain tile base using Schluter, Jolly stainless steel cap (thickness to suit tile) complete with 90 degree corner return caps installed as per manufacturer's instructions.
8. Install porcelain tile base using Schluter, Jolly stainless steel at all vertical outside corners (thickness to suit tile) installed as per manufacturer's instructions.

3.7 CERAMIC TILE

1. Install ceramic tile by adhesive method in accordance with installation manual Detail No. 303W-2000, for walls and 319SR-2000 detail A at shower floors. Terrazzo Tile and Marble Association of Canada using waterproof membrane system as per 3.5 this section at all shower floor, wall and ceiling areas.
2. Install levelling coat of 1 part Portland Cement and 4 parts sand 1/10 part latex additive and 1 part water (including latex additive) at floor locations and slope to drains.
3. Install levelling coat of 1 part portland cement: 1/5 to 1/2 parts hydrated lime: 4 parts sand: gauged with Custom Flex latex as per Custom building Products instructions at block wall locations.
4. Use a skim coat of adhesive to true up minor imperfections in the substrate surface.
5. Tamp tile into place for truing surface and for good contact with adhesive.
6. Grout joints after 24 hour adhesive set. Remove excess material and clean surface.
7. Clean all surfaces with cleaner solution specified as per manufacturer's instructions.

3.8 WATERPROOF MEMBRANE SYSTEM AT SHOWERS

1. Install Laticrete 9235 Waterproof Membrane System, or approved alternative with reinforced fabric at all new ceramic tile on levelling coats over concrete and masonry locations at shower walls, floors and ceilings and Drying Area, and as indicated on drawings.
2. Installation shall be made in strict accordance with the manufacturer's instructions.
3. Surface Preparation: Surface to be waterproofed should be plumb and true within 1/4 inch (6 mm) in 10 ft.(3m) as per 3.4 (b) above. Dry, dusty concrete slabs must be dampened and swept off. Installations may be made on a damp surface. Surface should be smooth, clean and free from dirt, grease, concrete sealers or curing compounds.

4. Installation:

1. Install the waterproofing liquid and fabric at ceilings, walls, floors and into the drains according to the approved details.
2. Use a brush or roller to apply a layer of liquid waterproofing slightly wider than the width of the fabric.
3. Immediately install the reinforcing fabric into the liquid. Install a final layer of liquid to completely seal the fabric.
4. Set tile with Laticrete 4237 Latex Thin Set method and grout with Latapoxy SP-100 stainless grout, or approved alternative. Colour as selected by the Owner.

3.9 GROUTING OF CERAMIC AND PORCELAIN TILE

1. Pack joints solid with grout at porcelain tile using a plastic or non-staining trowel.
2. Allow joints to stiffen before finishing.
3. Remove excess grout with clean cloths.
4. Grout shall be mixed according to manufacturer's instructions. Colours as selected by the Owner.
5. Clean all surfaces with clean solution specified as per manufacturer's instructions.

3.10 CAULKING

1. Install continuous caulking neatly and tool concave around base of all door frames and at all inside corners at 'wall to wall' and 'wall to ceiling' and 'wall to floor' (install at 'floor to wall' locations even where there is a base noted to cover this joint up) transition locations to stop transfer of noise and vibrations. Tiles at plane transitions should not touch, wall tile should start above floor tile with caulking space, etc. typical.

3.11 CLEANING AND REMEDIAL WORK

1. Clean tile surfaces upon completion of grouting as per tile manufacturer printed instructions using cleaning agents and procedures recommended by the manufacturers of tile and grout.
2. Remove all grout haze, observing tile manufacturer's recommendations as to use of acid and chemical cleaners. (Do not use muriatic acid on tile work or pavers.)
3. Rinse tile work thoroughly with clean water before and after using chemical cleaners.
4. After setting, all tile surfaces shall be sounded and visually inspected and wherever any hollow backed or damaged tiles are found they shall be removed and replaced with matching tiles.

3.12 PROTECTION FROM CONSTRUCTION DIRT

1. Seal cementitious grout joints and unglazed tile with "Aqua Mix Penetrating Sealer" by Aqua Mix Inc. or as recommended by manufacturer.

2. Cover all tile floors with heavy duty non-staining cotton reinforced paper or 6 mil vapour barrier taped into place.
3. Prior to final acceptance of tile work, remove paper and clean with "Aqua-Mix Miracle Cleaner" by Aqua Mix Inc. or as recommended by manufacturer.

3.13 PROTECTION FROM TRAFFIC

1. Prohibit all foot and wheel traffic from using newly tiled floors for at least three days, preferably seven days after grouting is completed.
2. Place large, flat boards in walkways and wheel ways for seven days, where use of newly tiled floor is unavoidable.
3. Leave finished installation clean and free of cracked, chipped, brock, unbonded or otherwise defective tile work. Replace damaged or defective work.
4. Provide cardboard walkway using recycled boxes to protect finished work during construction.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:** Supply and install all acoustic ceiling tile and required accessories to complete a proper installation including all non-combustible ceiling board and all exposed 'T' grid suspension systems as indicated on drawings and reflected ceiling plans.

1.2 REFERENCES & QUALIFICATIONS

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaw and the Ontario Ministry of Labour - all as currently amended.
2. References: (All as currently amended)
 1. ASTM C636, E580 Installation requirements.
 2. ASTM C635 and E3090 loading requirements.
 3. Armstrong Standard Suspended Ceilings, Assembly and Installation Instructions.

1.3 SUBMITTALS

1. Provide submittals in accordance with Section 01300 – Submittals.
2. Product Data: For all products specified herein, including product data, manufacturer's specifications, storage and handling requirements and recommendations, preparation and installation instructions for acoustic ceiling tiles and 't' bars, adjustment and alignment procedures and any special procedures.
 1. Armstrong Suspended Ceilings Installation Instructions.
 2. Armstrong Standard Suspended Ceilings, Assembly and Installation Instructions.
 3. Armstrong Installing Suspended Ceilings Assembly and Installation Instructions.
 4. Or installation instruction from approved alternative manufacturer.
3. Shop drawings:
 1. Shop drawings shall be submitted by the specified manufacturer only.
 2. Before shop drawings and fabrication is started, take critical measurements at the site to facilitate installation and fitting of work.
 3. Shop drawings shall be of best quality craftsmanship, incorporating specific job details not generic details.
 4. Shop drawings that are submitted are to be in the units of the tendered drawings, metric is mandatory with imperial as additional alternate is acceptable.

5. The Contractor, together with manufacturer, shall submit a written confirmation, signed and stamped by manufacturer's registered professional engineer, stating that the suspended ceiling system will provide adequate support for electrical fixtures, as required by current bulletin manufacturers installation instruction for weight.

NOTE: all electrical fixtures to have independent supports / hangers where ceilings cannot support the weight as per manufacturer installation instructions.

6. No fabrication and or installation shall commence until all shop drawings have been reviewed.
 7. Materials / products that have been installed on site that are not approved / reviewed / as specified, will be removed.
3. Samples: Submit for approval, one (1) sample of each type of tile to be used in the project along with all types of tees.

1.4 MAINTENANCE DATA & MATERIALS

1. Data: Provide maintenance data in Operation and Maintenance Manual.
2. Materials: Deliver acoustical units in packages for maintenance use amounting to 3% of gross ceiling area for each lay-in panel type. Store where directed. Clearly identify packages. Maintenance materials shall be of same production run as installed materials.

1.5 WARRANTY

1. The work and materials of this section shall be warrantied in accordance with GC 12.3 of CCDC Document 2 and SC 3.44 of the City of Brantford's Supplementary, most current issuance. In addition, provide minimum 10 (ten) year warranty on ceiling tiles for humidity and sag resistance.

1.6 JOB SITE CONDITIONS

1. Commence installation only after building has been enclosed and dust generating activities have been completed.
2. Permit wet work to dry completely before commencement of installation.
3. Ensure that a uniform minimum temperature of 15 deg. C. and humidity of 20-40% before, during, and after installation is maintained.

PART 2 – PRODUCTS

2.1 LAY-IN TILE SYSTEM.

1. Hangers: 12 gauge (2.0mm) minimum galvanized, soft annealed, mild steel hanger wire, 1200mm (48") on center maximum (or spacing as determined by seismic loading installation), install at 600mm (24") on center where additional loading support is required or galvanized steel wire of size capable of safely supporting anticipated ceiling system and loading. Verify if lighting fixtures or other electrical or mechanical equipment's weight is over the required 't' bar suspension limits and if the equipment needs to be self- supported with additional hanger wires.

2. Tees:
 1. Main Tees: .021" (.53 mm) thick cold rolled steel, double web, with rectangular bulb section at least 1 1/2" (38 mm) high. Fabricate with punched cross tee holes at not greater than 16" (400 mm) o.c. and hanger wire holes at 2" (50 mm) o.c. Exposed flange shall be 15/16" (23.8 mm) wide and not less than .009" (.23 mm) thick cold rolled steel.
 2. Cross Tees: Double web design with rectangular bulb; web extending to form a positive inter lock with main tees in same exposed flange width.
 3. See specific lay-in panel types for width of Tees to be used with each tile type.
3. Accessories:
 1. Miscellaneous approved clips, splicers, screws, nails and other standard types to suit applicable conditions. Provide special accessories as required. Accessories shall be galvanized after forming.
 2. Standard edge moulding as manufactured by system manufacturer to suit applicable details. Moulding shall be formed of zinc coated steel.
 3. Provide Armstrong Impact Clip System Item No. 414 system, or approved alternative, at areas where clipped down ceilings are indicated on drawings and at all vestibule entrances. Provide accessible type clips where access is required.
4. Finish:
 1. Tees, edge mouldings, and exposed accessories shall be finished with baked, non-yellowing, low sheen colour to match colour of lay-in panels.
5. Lay-in Panels:
 1. Install tile types where acoustic tile is indicated on room finish schedule. Mineral tile types are as listed below:
AT1: "Cortega" #823 - 24" x 48" x 5/8" (610mm x 1220mm x 16mm) with square lay-in edge detail with Prelude 15/16" suspension system as manufactured by Armstrong or equal by C.G.C. or Celotex, or other approved alternative.
6. Tie Wire: 1.2 mm galvanized annealed steel wire.
7. Inserts and attachments to Structure for Hanger Connections: to suit conditions and loadings, galvanized after fabrication.

PART 3 – EXECUTION

3.1 WORKMANSHIP

1. Installation shall be by skilled mechanics and in strict accordance with system manufacturer's printed directions to produce a first class, flush finished surface in true plane and free from drooping, warped, uneven joints, damaged tile or panels. Butt joints tightly.

2. Consult with mechanical and electrical trades to co-ordinate and arrange work to accommodate recessed fixtures, diffusers, grilles, and other similar items, where indicated on mechanical and electrical drawings. Recessed items shall replace, or be centred in acoustical units.
3. Frame around recessed fixtures, diffusers, grilles and openings and where normally required in good standard practice.
4. Provide all furring required and construct drywall bulkhead, incorporated as part of best standard practice to the Consultant's approval.
5. Provide and install protection panels and/or five sided box enclosures at recessed lighting fixtures, speaker boxes, diffusers, duct openings, firestop flaps, etc. as specified in the applicable ULC assembly specification. Approval of enclosures and protection will be by the Consultant and/or Municipal Authorities.

3.2 **ERECTION**

1. Lay-in Tile System

1. Install ceiling suspension system to ASTM C636-76 and manufacturer's instructions, except where specified otherwise.
 1. Supply hangers and inserts to support the grid in time to be installed in structural system if required.
 2. Hangers for acoustic systems shall be spaced to comply to U.L.C. Design, approximately 4 ft. (1200 mm) centres both ways and where normally required in good standard practice.
 3. Secure hangers firmly.
 4. Erect carrying channels for suspended systems of required elevation and level to tolerance of 1/8" (3.2 mm) over 12 ft. (3650 mm). Frame around recessed fixtures, diffusers, grilles and openings and where normally required in good standard practice. Furr around ducts, beams, bulkheads or the like, as shown or required by U.L.C. Standard.
 5. Ensure that the suspension system supports the completed assembly, including all superimposed loads, such as lighting fixtures, diffusers and grilles, with a maximum deflection of 1/360 of the span. Provide supplemental hangers within 6" (150 mm) of each corner and at maximum 2'-0" (610 mm) around perimeter of light fixtures.
 6. Attach exposed tees at centres required in good standard practice.
 7. Install expansion joints in all main beams as required by U.L.C.
 8. Provide angle wall mouldings at junctions of ceilings and vertical surfaces.
 9. Provide spring clips to ensure tight installation, in rooms having an area less than 20 sq. ft. (1800 mm²).
 10. Provide lay-in tile and grid to meet fire rating at all fire rated ceilings.

11. Erect ceiling system at required elevation and level to tolerance of 1/8" (3 mm) in 12'-0" (3660 mm).
12. Cut reveal edges to match factory detail at all reveal edge lay-in ceiling that needs cutting to fit grid size.

3.3 FIXTURE SUSPENSION

1. Make provisions for carrying flush mounted and recessed fixtures on suspended ceilings, using 4 hangers per fixture. Consult and coordinate with Electrical and Mechanical Trades.
2. The suspended ceiling system must comply with the current bulletin from the Electrical Inspection Department of Ontario Hydro regarding "Lighting Fixtures in Suspended Ceilings".
3. It is the responsibility of this contractor to supply the Consultant with a letter stating that the suspension system is capable of holding the electrical fixtures as shown on the electrical drawings and as required by the above bulletin of the Electrical Inspection Department of Ontario Hydro.

3.4 MITRED JOINTS

1. "T" bar ceiling grid to be mitred at the outside corners.

3.5 ACOUSTICAL UNITS

1. Install acoustical units parallel to building lines to produce uniform borders and with edge units not less than 50% of unit width.
2. Accurately scribe and cut acoustical units to fit recessed items and adjacent work. Butt joints tight; terminate edges with moulding.

3.6 SPECIAL CLEANING

1. Keep acoustical panel installation and all components clean.
2. Remove and replace damaged or improperly installed units.

3.7 MECHANICAL EQUIPMENT ACCESS

1. Install "T" bar system to allow it to be removed easily at areas where mechanical units occur to allow units to be easily removed.

NOTE: Stop main "T" on each side of equipment access.

3.8 IMPACT CLIPS

1. Install Impact Clip System at all acoustic tile ceiling areas indicated on drawings including rooms less than 20 sq. ft., (1800 sq. mm.) and all vestibules.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. Coordinate all locations shown on drawings and for all items located herein.
 2. Provide resilient flooring (LVT) as specified herein and at all locations shown in the Room Finish Schedule, Interior Finish Schedule (Colour Schedule) and as shown on drawings.

1.2 REFERENCES & QUALIFICATIONS

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaw and the Ontario Ministry of Labour - all as currently amended.

1.3 SUBMITTALS

1. Provide submittals in accordance with Section 01300 – Submittals.
2. **Product Data:**
 1. For all products specified herein, including product data, manufacturer's specifications, storage and handling requirements and recommendations, preparation and installation instructions, adjustment and alignment procedures and any special procedures.
2. **Shop Drawings:**
 1. Shop drawings shall be submitted by the specified approved manufacturers only.
 2. Before shop drawings and fabrication is started, take critical measurements at the site to facilitate installation and fitting of work.
 3. Where field measurements cannot be made without delaying the work, guarantee dimensions and proceed with fabrication corresponding to the established dimensions.
 4. Shop drawings shall be of best quality craftsmanship, incorporating specific job details not generic details.
 5. Shop drawings that are submitted are to be in the units of the tendered drawings, metric is mandatory with imperial as additional alternate is acceptable.
 6. Show all locations required, expansion joints and control joints along with relation to subfloor control joints, termination details, transition strips, etc.
 7. Indicate layout, size and description of components, pattern layouts, seam locations, base material, surface finish, and all other pertinent data and information, along with any other requirements requested by the Consultant.
 8. No fabrication and or installation shall commence until all shop drawings have been approved.

9. Materials / products that have been installed on site that are not approved / reviewed / as specified, will be removed.
10. Samples:
 1. For all products specified herein.
 2. Colours and textures and patterns: as selected by the Owner to be accompanied with a hardcopy colour chart and physical full size sample for tiles, base, transition strips, etc., in each standard colour or design to be used for selection or as selected and noted below.

1.4 MAINTENANCE DATA & MATERIALS

1. Data: provide maintenance data for flooring work.
2. Materials: Provide a minimum of 2% of each type and colour of resilient flooring required for project maintenance use. Store where directed. Maintenance material to be of same production run as installed material.

1.3 ALLOWANCES

1. N/A

1.4 DELIVERY & STORAGE

1. Arrange for early deliveries necessary for execution of work without delay and have materials on job well in advance of the time it is needed to avoid construction delays.
2. Deliver, store and handle materials to exclude foreign material and prevent damage, soiling or breakage.
3. Delivery to the job site shall be coordinated by the General Contractor.
4. Materials stored on site which need to be protected from weather shall be so protected.
5. Store in manufacturers unopened packing labelled with description of contents along with numbering or nomenclature used on shop drawings and bearing brand and manufacturer's name in a secure, dry and warm, protected with adequate ventilation, free from dust and water location in accordance with manufacturer's printed directions / instructions until installation can proceed. Inspect product upon receipt and report damaged material immediately to delivering carrier and note such damage on the carrier's freight bill of lading.
6. Keep products from freezing.
7. Each item is to be individually wrapped in protective crating or packaging complete with all fittings and accessories as required.
8. Storage of any material on or off the site is the responsibility of the contractor.
9. Deliver materials in original containers with manufacturer's seals and labels intact. Maintain temperature of storage area at 70°F (21°C) for 48 hours prior to installation.

1.5 SPECIAL PROTECTION

1. Provide adequate protection of materials and work of this Section from damage by on site storage, weather, construction activities and other causes.
2. Protect the work of other sections from damage resulting from work of this section and protect the work of this section from damage resulting from work of other sections. Make good such damage to the satisfaction of the Consultant.
3. Contractor to exercise protective treatment and other precautions required through the construction period, to ensure that items listed will be without damage or deterioration other than normal weathering and wear.
4. If items are damaged / soiled as noted above, items are to be replaced / repaired at contractor's expense, not extra cost to the contract.
5. Consult with section of work soiled before cleaning to ensure methods used will not damage their work.
6. All patching and repair due to damage by other subcontractors, shall be performed under this section and paid for by the subcontractor responsible for the damage.
7. General Contractor's Responsibility: In each location immediately following installation, protect new floors, if work is to be done after flooring installed with heavy cotton reinforced paper or polyethylene taped at joints and maintain in place until The Consultant gives instructions for the removal of temporary protection. Work shall be handed over to the Owner free of blemishes and in perfect condition.

1.5 WARRANTY

1. The work and materials of this section shall be warrantied in accordance with GC 12.3 of CCDC Document 2 and SC 3.44 of the City of Brantford's Supplementary Conditions, most current issuance. In addition, warranty coverage to be extended for all work of this Section, including materials and workmanship, for a period of ten (10) years from the date of Substantial Performance.

1.6 SEQUENCING & SCHEDULING

1. Ensure all work is installed and completed that will be concealed by this work.
2. The Contractor shall cooperate in the coordination and scheduling of the product to avoid delays in job progress.
3. Coordinate the Work of this Section with the work of all other Sections in accordance with the General Instructions.

1.7 PROJECT SITE CONDITIONS (ENVIRONMENTAL CONDITIONS)

1. Maintain minimum 70°F (21°C) air temperature at flooring installation area during installation and for 72 hours prior to and until floor area is occupied by Owner.
2. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.8 TESTING & INSPECTION & FIELD QUALITY CONTROL

1. Manufacturer's representative shall provide technical assistance and guidance for installation of products.

2. If installing on a concrete slab, it must be cured a minimum of 28 days and dry. Flooring must not be installed if vapor pressure exceeds 3 lbs. per 1000 square feet in 24 hours as tested according to ASTM F 1869 (calcium chloride test method). Preferably the slab should be tested according to ASTM F 2170 (Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using In Situ Probes). Flooring must not be installed if the relative humidity inside of the concrete slab exceeds 75% or more than recommended by the manufacturer installation instructions and requirements for adhering glues.

1.9 APPROVAL / ACCEPTANCE / REMEDIATION

1. To be reviewed by The Consultant for fabrication quality.
2. Remove and replace work that cannot be satisfactorily repaired.
3. All work that is installed over an uncleaned work zone, where debris and mess is left from the previous sub-trade or this sub-trade, will be removed and re-installed upon Contractors expense, at no additional cost to the contract. All previous debris, glue, flooring, base, transition strips, etc. will be removed and substrates cleaned before re-installation. Coordinate with Examination and Clean-Up headings below.
4. All work that is installed over concrete floor slab control joints / saw cuts that do not have specified filler filling the joints will be removed and re-installed upon Contractors expense, at no additional cost to the contract. All previous debris, glue, flooring, base, transition strips, etc. will be removed and substrates cleaned before re-installation.
5. All flooring that is not adhering to the substrate will be removed and re-installed upon Contractors expense, at no additional cost to the contract. All previous debris, glue, flooring, etc. will be removed and cleaned before re-installation. The complete room is to be re-done.
6. All flooring patterns that are not straight with the walls will be removed and re-installed upon Contractors expense, at no additional cost to the contract. All previous debris, glue, flooring, etc. will be removed and cleaned before re-installation. The complete room is to be re-done.
7. All flooring installed over sub-floor preparation that is not level or uniform to tolerances as specified will be removed and re-installed upon Contractors expense, at no additional cost to the contract. All previous debris, glue, flooring, etc. will be removed and cleaned along with installation of any subfloor filler and leveller before re-installation. The complete room is to be re-done unless flooring joints are accepted by the Consultant.
8. All flooring installed over sub-floor preparation of floor slopes that is not a uniform and consistent slope to the floor drains and to tolerances as specified along with any bowl-shaped features around the floor drains and tripping hazards will be removed and re-installed upon Contractors expense, at no additional cost to the contract. All previous debris, glue, flooring, drains, etc. will be removed and cleaned along with any subfloor filler and leveller and any floor drain extensions before re-installation. The complete room is to be re-done unless flooring joints are accepted by the Consultant.
9. All flooring that is not protected after installation and receives damage will be removed and re-installed upon Contractors expense, at no additional cost to the contract. All previous debris, glue, flooring, etc. will be removed and cleaned before re-installation.
10. All base that is adhered to wobbly substrate will be removed and re-installed upon Contractors expense, at no additional cost to the contract. The back up substrate will be evened / straightened out before re-installation.

11. All transition strips that are not fastened down or products as specified or reviewed will be removed and re-installed upon Contractors expense, at no additional cost to the contract.

PART 2 - PRODUCTS

2.1 MATERIALS

1. Luxury Vinyl Plank Flooring (LVP1): Gerflor Creation 70 luxury vinyl plank, 2.5mm thick x 1243mm x 208mm. Colour to be Douglas (0535). Or approved alternative.
2. Rubber Base: Johnsonite / Tarkett Duracove traditional thermoplastic rubber wall base system, 3.2mm (1/8") thick, 100mm (4") height, with toe. Use continuous coil rubber base, not 1220mm (4'-0") lengths. Colour to be Moon Rock MG (29). Or approved alternative.

2.2 ACCESSORIES

1. Sub-Floor Filler and Leveler: Use only gray Portland cement-based "moisture tolerant" underlayment's, and patching compounds. Use for filling cracks, holes or leveling. White gypsum materials are not acceptable.
 1. Adrex SD-F Feather Finish portland cement-based filler by Ardex Engineered Cements. Levelrock brand Super Smooth Patching Compound by C.G.C. is an approved alternative product. Or other approved alternative.
2. Concrete Floor Sealer: to C.G.S.B. 25-GP-20m Type 1.
3. Primers and Adhesives: Environmentally friendly materials as recommended in writing by flooring and base manufacturer, to suit type of sub floor and wall finish of installation. Adhesive shall produce good and waterproof bond between applicable substrate and flooring.
4. Transition Strips / Terminations: 14-gauge zinc divider strip. Add the following transition strip types by Schluter (unless noted otherwise) for the following locations, height of transition strips to suit tile thickness. Or approved alternative.
 1. To Concrete: Vinpro-U, ATGB brushed nickel anodized aluminum finish.
 2. To Resilient (or other same height material): Vinpro-T (14mm wide), ATGB brushed nickel anodized aluminum finish.
 3. To PT: Reno-V, AE satin anodized aluminum finish.
 4. Top of wall base or integral cove cap and irregular wall surfaces: Seal and provide plastic filler applied according to the manufacturer's recommendations. Install aluminum extruded smooth AE satin anodized aluminum termination strip, shoulder flush with top of base.
 5. Sealers and Waxes: Type recommended by flooring manufacturers for material type and location and shall be compatible with Owner's sealer and wax. Obtain Owner's approval of sealer and wax product prior to installing flooring product.
 6. Caulking: Coordinate with Section 07900 Sealants.
 7. Cleaner: Neutral chemical compound as approved by manufacturers that will not damage material or affect its colour.
 8. Protection Cover: Non-staining heavy duty kraft paper, or cardboard.

PART 3 - EXECUTION**3.1 INSPECTION**

1. Ensure floor surfaces are smooth and flat to plus or minus 1/8" (3.2 mm) over 10 ft. (3050 mm).
2. Ensure concrete floors are dry by using test methods recommended by manufacturer, and exhibit negative alkalinity, carbonization or dusting. Ascertain nature of curing and/or sealing compound used on concrete and its compatibility with flooring adhesive. Take all required remedial measures. Remove compounds if necessary to ensure that adhesive bonds to concrete.
3. Installation of any part shall constitute acceptance of these surfaces as satisfactory.

3.2 PREPARATION

1. Remove sub floor ridges and bumps by light buff grind. Fill low spots, cracks, joints, holes and other defects with sub floor filler.
2. Clean floor and apply trowel and float filler to leave smooth, flat hard surface. Prohibit traffic until filler cured.
3. Split, bumpy or otherwise deformed tile resulting from improperly prepared base, will not be accepted.
4. Prime/seal concrete slab to resilient floor tile manufacturer's printed instructions.
5. Fill all low spots in flooring with high grade latex cement base flashing compound and gently blend in floor level at a rate of 1/8" per 1'-0" (10.5 mm per 100000 mm) to flush resilient flooring with ceramic tile, quarry tile, etc.
6. Power sand concrete floor smooth then dry vacuum clean entire floor area.

3.3 INSTALLATION - RESILIENT FLOORING

1. Apply adhesive uniformly to manufacturer's directions. Do not spread more adhesive than can be covered before initial set takes place.
2. Lay flooring with joints and seams parallel to building lines to produce a randomized pattern unless noted otherwise.
3. Distribute planks having varying tones or texture evenly over entire floor area to avoid patches or streaks, and to produce homogeneous blend. Reject planks having undue variations in colour, shade and texture.
4. Make plank joints flush, uniform, in straight lines and as inconspicuous as possible.
5. Set flooring in place, press with 100 lb. (45 kg.) minimum roller to ensure full adhesion.
6. Cut flooring and fit neatly around fixed or excessively heavy objects.
7. Terminate flooring at center line of door leaf in door openings where adjacent floor finish is dissimilar.

8. Install transition strips at unprotected edges of flooring or changes in flooring types.

3.4 INSTALLATION – BASE

1. Layout base to keep number of joints to a minimum.
2. Install straight and level to variation of plus or minus 1/8" (3.2 mm) over 10'0" (3050 mm) straight edge.
3. Fill cracks and level irregularities of surfaces to which base is to be applied with filler approved by adhesive manufacturer so as to provide solid backing over entire area behind base. Cement cove base to vertical surfaces so that gaps do not occur behind base, so that front lip of base cove bears firmly and uniformly on floor surface, and so that good and permanent bond is produced between base and surface to which it is applied. Set base tightly in adhesive by using a 7 lb. (3 kg.) roller against wall and floor surfaces. Make end joints flush with gap.
4. Scribe and fit to door frames and other obstructions.
5. Cope internal corners.
6. Use full length pieces where possible. Accumulated short lengths at base not permitted.
7. Supply straight base for carpeted areas and cove base for resilient flooring areas.
8. Supply rubber base for all millwork bases.
9. Gaps below bottom edge of base will not be accepted.

3.5 PROTECTION OF FINISHED WORK

1. Prohibit traffic on floor for 48 hours after installation.
2. Protect floors as per item 1.7.1 in this Section.
3. Clean floors and wax during final cleaning just prior to Owner occupying building.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:**
 1. Coordinate all locations shown on drawings and for all items located herein.
 2. All paint work is included in the scope of this Section, **interior and exterior, new and existing, all surfaces / substrates / materials / systems / items / etc. Everything is to be painted,** unless otherwise noted.
 3. Coordinate with Interior and Exterior Finish Schedule.
 4. In locations where drawings do not call for paint or similar finish on surfaces, the intent of this Section is that all exposed unpainted / painted surfaces shall be painted.
 - a. For existing conditions, all exposed unpainted / painted surfaces shall be painted / re-painted, all disciplines, all items. Coordinate with drawings and room finish schedule for extents.
 5. Paint visible portions of all exposed / primed Architectural systems and materials (ie. gypsum board, walls, ceilings, ceiling grids, door leafs and frames, floors, etc.).
 6. Paint visible portions of all exposed / primed Structural systems and materials, (ie. concrete, masonry, lintels, structural steel, etc.).
 7. Paint visible portions of all exposed / primed Mechanical systems and materials. (ie. Duct work, piping, rain water leaders, abs, pvc, grilles, diffusers, returns, etc.).
 8. Paint visible portions of all exposed / primed Electrical systems and materials. (ie. Panels, conduit, exposed receptacles, etc.).
 9. Other locations as noted in this specification section.

1.2 REFERENCES & QUALIFICATIONS

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaw and the Ontario Ministry of Labour - all as currently amended.
2. **Certificates:**
 1. N/A
3. **Qualifications:**
 1. Contractor for this work to have a minimum of five years' experience as a painting Subcontractor.
 2. Employ fully trained workers who are regularly employed in this field.
 3. Manufacturers sales representative shall perform inspections on the Owner's behalf to ensure compliance with product specifications.

4. References (All as currently amended):

1. Paint work shall meet or exceed standards set out in C.G.S.B. Specification No.'s 85-GP-1M to 85-GP-33A and C.P.C.A. Canadian Painting Contractors Association - Painting Manual.

1.3 SUBMITTALS

1. Provide submittals in accordance with Section 01300 – Submittals.

2. Product Data:

1. For all products specified herein, including product data, manufacturer's specifications, storage and handling requirements and recommendations, preparation and installation instructions, adjustment and alignment procedures and any special procedures.

3. Shop Drawings:

1. Shop drawings shall be submitted by the specified manufacturer only.
2. Colours and textures as selected by the Owner to be accompanied with a hardcopy physical sample draw down for selection / confirmation. Coordinate with this specification section and Exterior and Interior Finish Schedule.

4. Samples:

1. Prepare samples of various finishes for Consultant's approval, at least 60 days before materials are required.
2. Submit samples in triplicate on 8" x 12" (200mm x 300mm) material.
3. Identify each sample as to job, finish, formula, colour, name, number, sheen name and gloss units, date and name of Subcontractor.
4. Colours and textures as selected by the Consultant to be accompanied with a hardcopy physical sample draw down for selection / confirmation.
5. Coordinate with this specification section and Exterior and Interior Finish Schedule.

5. Mockups:

1. A room or area in the building will be designated by the Consultant as a test area to establish standard of workmanship, texture, gloss and coverage.
2. Prior to any painting being started, Contractor to request a meeting on Site between Consultant, Contractor, Subcontractor and Material Manufacturer's Representative to review conditions, surfaces, anticipated problems and to clarify quality of workmanship acceptable to the Consultant.
3. Apply finishes to each type of surface within room with correct material, coats, colour, texture and degree of gloss in sample area and have same approved prior to providing Work of this Section.
4. Retain test area until after completion of Work.
5. Test area to be minimum standard for the Work.

6. Failure to comply with the above will be cause for the Consultant to request all Work previously painted to be repainted.

1.4 MAINTENANCE DATA & MATERIALS

1. Data: Provide maintenance data in Operation and Maintenance Manual.
2. Materials: Provide two sealed cans one liter capacity of each product in each colour upon completion of work and deliver to Owner where directed. All remaining paint to be stored in 5-gallon paint cans used for Owner's maintenance work. Material to be in sealed metal cans and fully labelled with manufacturer's name, product, type of paint and colour.
3. Provide Owner paint formula in operation and maintenance manuals for each colour and type of paint for Owner's maintenance manual.

1.5 ALLOWANCES

1. N/A

1.6 DELIVERY & STORAGE

1. Arrange for early deliveries necessary for execution of work without delay and have materials on job well in advance of the time it is needed to avoid construction delays.
2. Deliver, store and handle materials to exclude foreign material and prevent damage, soiling or breakage.
3. Delivery to the job site shall be coordinated by the General Contractor.
4. Materials stored on site which need to be protected from weather shall be so protected.
5. Store in manufacturers unopened packing labelled with description of contents along with numbering or nomenclature used on shop drawings and bearing brand and manufacturer's name in a secure, dry and warm, protected with adequate ventilation, free from dust and water location in accordance with manufacturer's printed directions / instructions until installation can proceed. Inspect product upon receipt and report damaged material immediately to delivering carrier and note such damage on the carrier's freight bill of lading.
6. Keep products from freezing.
7. Take all necessary precautions against fire and freezing, provide CO2 fire extinguisher of minimum 20lbs (9kg) capacity in storage area.
8. Store flammable materials in safe, approved containers to eliminate fire hazards. Remove from Site at end of each work shift.
9. Do not use materials that have been stored for period exceeding maximum recommended shelf life of materials.
10. Storage of any material on or off the site is the responsibility of the contractor.

1.7 SPECIAL PROTECTION

1. Provide adequate protection of materials and work of this Section from damage by on site storage, weather, construction activities and other causes.

2. Protect the work of other sections from damage resulting from work of this section and protect the work of this section from damage resulting from work of other sections. Make good such damage to the satisfaction of the Consultant.
3. Contractor to exercise protective treatment and other precautions required through the construction period, to ensure that items listed will be without damage or deterioration other than normal weathering and wear.
4. If items are damaged as noted above, items are to be replaced / repaired at Contractor's expense, not extra cost to the contract.
5. Consult with section of work soiled before cleaning to ensure methods used will not damage their work.
6. All patching and repair due to damage by other subcontractors, shall be performed under this section and paid for by the subcontractor responsible for the damage.
7. Provide metal pans or adequate tarpaulin to protect floors in areas assigned for the storage and mixing of paints.
8. Use sufficient drop cloths and protective coverings for the full protection of floors, furnishings and work not being painted.
9. Leave above areas clean and free from evidence of occupancy upon completion of painting.
10. Keep waste rags in metal drums containing water and remove from building at end of each working shift.

1.8 WARRANTY

1. The work and materials of this section shall be warrantied in accordance with GC 12.3 of CCDC Document 2 and SC 3.44 of the City of Brantford's Supplementary Conditions, most current issuance.

1.9 SEQUENCING & SCHEDULING

1. Ensure all work is installed and completed that will be concealed by this work.
2. The Contractor shall cooperate in the coordination and scheduling of the product to avoid delays in job progress.
3. Coordinate the Work of this Section with the work of all other Sections in accordance with the General Instructions.

1.10 PROJECT SITE CONDITIONS (ENVIRONMENTAL CONDITIONS)

1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
2. Do not paint or finish in unclean and/or improperly ventilated areas. Do not paint in temperatures lower than 50 degrees F (10 degrees C) or varnish in temperatures lower than 65 degrees F (18 degrees C) for 24 hours before and 48 hours after application.
3. Do not undertake exterior painting at temperatures under 50 degrees F (10 degrees C) for 24 hours before, and 48 hours after application or immediately following rain, frost or dew.
4. Test for moisture content in each location immediately before commencing application of paint or finish. Do not apply paint on surfaces where moisture content exceeds 14%. Promptly notify Consultant if such conditions are encountered.

5. Provide approved equipment for testing moisture content of surfaces to receive paint finishes and have available on site at all times during the Work of this Section.
6. Do not apply paint finish in areas where dust is being generated.

1.11 **APPROVAL / ACCEPTANCE / REMEDIATION**

1. To be reviewed by Consultant for application quality and quantity.
2. Remove and replace work that cannot be satisfactorily repaired.
3. All work that is installed over an uncleaned work zone, where debris and mess is left from the previous sub-trade or this sub-trade, will be removed and re-installed at the contractors expense, at no additional cost to the contract.
4. The cost of any additional work or application of any part of the work resulting from failure of the material to meet the requirements or installation, shall be borne by the Contractor.
5. Pinholes in concrete block masonry (cmu) will not be accepted. Where this is found, block primer will be re-installed over any installed paint that is applied, or further coats of block primer will be installed until there is no more pin holes exposed.
6. Stripes in paint roller strokes will not be accepted, the surface is to be a uniform finish.

PART 2 - PRODUCTS

2.1 **MATERIALS**

1. Top Line products only are to be used. Use only products of manufacturers whose best quality lines meet or exceed CGSB Specifications for the particular type of material required. Approved manufacturer and product unless specifically indicated otherwise in specification, or other approved alternative accepted:
 1. Paint manufacturers:
 1. Sherwin Williams
 2. Latex Super Adherent Primer:
 1. Sherwin Williams ProMar 200 Zero V.O.C. Interior Latex Primer – B28W12600 White
 3. Interior Latex Paint: (Eggshell – Walls)
Where EP (epoxy) is NOT noted on the finish schedule
 1. Sherwin Williams S-W ProMar 200 Zero V.O.C. Latex Eggshell Finish
 4. Interior Paint: (Eggshell - Walls)
Where EP (epoxy) is noted on the finish schedule
 1. Sherwin Williams Pro Industrial Water Based Catalyzed Epoxy B73-300 Series (Part A), B73V00300 (Part B)

5. Interior Latex Paint: (Flat - Ceilings)
 1. Sherwin Williams ProMar 400 Zero V.O.C. Interior Latex Flat, B30W04651 Extra White, B30W04653 Deep Base.
 6. Interior Paint: (Semi-Gloss – Hollow Metal Door Leafs and Frames)
 1. Sherwin Williams Pro Industrial DTM Acrylic Semi-Gloss, B66-1150 Series.
- Note: Colours will be selected from Sherwin-Williams colour system. Sherwin-Williams colour formulas must be matched if other approved manufacturers are being used.
7. Thinners, cleaners: Type and brand recommended by the paint manufacturer.
 8. Materials to be new and first line of manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

1. The Contractor shall, together with any and all other subcontractors involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
2. Contractor shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the subcontractor for correction prior to commencing the work of this section.
3. Commencement of the work of this section shall imply acceptance of all surfaces and conditions.
4. Proceed with installation only after unsatisfactory conditions, discrepancies or conflicts have been corrected.

3.2 PREPARATION

1. Clean surfaces thoroughly prior to installation, new and existing.
2. Check all surfaces with electric moisture metre and do not proceed if reading is higher than 12-15 without written permission from the Consultant.
3. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
4. Proceed with work only when surfaces and conditions are satisfactory for production of a first-class job.
 1. Clean and remove dust, grease, rust and extraneous matter from all surfaces (except that rust occurring on items specified to be primed under other sections shall be removed and worked reprimed under these sections).
 2. The commencing of work in a specific area shall be construed as acceptance of the surfaces, and thereafter the contractor shall be fully responsible for satisfactory work as required herein.
 3. All surfaces shall be prepared in accordance with Chapter 2 for Interior Work of the Master Painters and Decorators Association Painting Manual latest edition.

4. Prepare surfaces in accordance with paint covering manufacturer's instructions.
5. Metal
 1. All metal surfaces to receive coatings shall be cleaned to SSPC-SP1 (solvent washing) prior to painting as specified herein.
 2. Touch-up shop primed metal after first removing loose primer, rust, oil, grease and other contaminants.
 3. All metal surfaces exposed and/or exhibiting rust shall be cleaned to SSPC-SP2 or SSPC-SP3 standards and primed with an approved rust inhibitive primer prior to recoating as specified.
 4. Feather edges to make touch-up inconspicuous when applying new primer.
 5. Conform to CGSB 1-GP40d.M to CGSB 85-GP-14M.
6. Gypsum Wallboard
 1. For small holes, scratches or other surface marks fill with patching compound and sand smooth.
 2. For larger holes or damaged areas do not proceed until subcontractor for original work has filled or repaired surfaces to acceptable levels.
 3. Prepare wallboard surfaces to CGSB-85-GP-33M.
7. General
 1. Mask specification plates occurring on equipment, switch boxes, and similar items requiring painting.
 2. Protect, remove and replace hardware, accessories, lighting fixtures and similar items as required.
 3. Conform with Interior and Exterior Colour Schedules and match approved samples.

3.3 INSTALLATION / APPLICATION

1. Install / apply materials in strict accordance with manufacturer's directions, installation instructions, recommendations and specifications along with approved submittals.
2. Finishes and number of coats specified in the schedule are intended to cover surfaces perfectly. If they do not, apply further coats until perfect coverage and colour are achieved as required.
3. Any areas exhibiting incomplete or unsatisfactory coverage shall have the entire plane painted. Patching will not be acceptable.
4. Walls needing repainting, entire wall (plane) shall be painted to the satisfaction of the Consultant. See drawings for extent of work.
5. Spray painting will not be permitted (except at metal deck and joist areas) unless specifically approved in writing by the Consultant in each instance. Consultant may withdraw approval at any time and prohibit spray painting for reasons such as carelessness, poor masking or protection measures drifting paint fog, disturbance to other

subcontractors or failure to obtain a dense, even, opaque finish. Spray painting shall be full double coat, i.e. at least two passes for each coat. Do not use spray or roller on wood or metal surfaces, brush only unless approved in writing by the Consultant. Spray painting and backroll may be permitted on concrete blocks.

6. Arrange to have traffic barred from completed areas wherever possible.
7. Apply primer-sealer coats by brush or roller method. All primers and undercoats to be tinted to no more than 25% of the finish colour.
8. Permit paint to dry before applying succeeding coats, touch up suction spots and sand between coats with No. 00 sandpaper.
9. Where two coats of the same paint are to be applied, the first coat shall be the same colour as the finish coat and be inspected by the before application of final coat, to allow the Consultant to make reasonable modification of colour if necessary. Furnish Consultant with a schedule showing expected completion of the respective coats of paint for the various areas and surfaces. Keep this schedule current as the job progresses.
10. Exterior paints and deep/intense interior and exterior colours shall be from the nearest factory premixed colour selection and shall be alterable to match required colours.
11. Flat and semi-gloss finishes on gypsum wall board, block and other surfaces of large areas shall be applied by roller and to all other surfaces applied by brush.
12. Paint shall be uniform in sheen, colour and texture, free from brush or roller marks, sags, runs or other defects.
13. Carefully hand smooth and sandpaper wood between coats (including priming). Apply one coat sealer before applying first coat paint filler to knots or sap blemishes on wood surfaces to receive paint or stain finish.
14. Remove rust, oil, grease and loose shop paint from metal work by brushing or with wire brushes and make good shop coat before proceeding with final finish. Feather out edges to make touch up patches inconspicuous.
15. After first coat, fill nail holes, splits, and scratches, using putty coloured to match finish.
16. Clean castings with wire brush before application of first paint coat.
17. Do not etch galvanized metal. Prepare prime and paint elsewhere in this section. This includes metal door frames and the like with wiped zinc coating.
18. Remove form oil or parting compounds from concrete surfaces. Use Xylol or approved compound.

3.4 Structural:

1. Paint all work, all visible portions of all exposed / primed Structural systems and materials. Including but not limited to steel shelf angles, lintels, structural steel, stairs, etc.

3.5 Mechanical and Electrical:

1. Coordinate with Mechanical and Electrical Sections of the Specifications and note the instructions regarding painting and finishing of materials and equipment supplied and installed by those trades.

2. Paint all work, all visible portions of all exposed / primed Mechanical and Electrical systems and materials. Colour, etc. to match adjacent walls, ceilings, etc. that they are installed / mounted on unless directed otherwise or noted in shop drawings (new material).
 1. Where items are mounted on / in a surface, they are to be painted.
 2. Remove mechanical and electrical systems from installed location and paint separately where applicable, if these items are not factory finished.
 1. This includes but is not limited to trims, covers, cover plates, flanges, grilles, diffusers, speakers, pa system, louvres, vents, ducting, piping, insulations, fire extinguisher cabinets, electrical panels and doors, mechanical panels and doors, access panels, cabinet heaters, base board heaters, in-floor heating manifold covers, conduit, wiring, chases, wiring covers, surface mounted items, etc.
 2. All existing electrical receptacle / switch covers / blanks to be replaced to match new.
3. Where there are finished ceilings and no finished ceilings, all exposed structural items (decks, joists, beams), mechanical items (ducts), electrical items, and other disciplines, systems and materials, etc., are to be painted.
4. Unless factory painted, all exposed structural, mechanical, electrical, and other disciplines, systems and materials, etc. work shall be painted.
5. Where walls, floors and ceilings are, and are not scheduled to be painted, the work described above shall be painted a colour selected by The Consultant.
6. Paint all exposed interior surfaces that are visible through mechanical openings, walls or ceilings with one coat of flat black matt finish metal paint to limit of sight line.
7. Paint all roof top equipment, pipes, conduit, vents, ducts, pipe, insulations, etc. exposed on roofs (including primed and prefinished items).

3.6 ADJUST AND CLEAN

1. Cracks occurring in walls or ceilings requiring patching during "warranty period" shall be repainted in such a way that the patch is not visible at a distance of 5'-0" (1500 mm).
2. If patch painting not acceptable repaint entire wall or ceiling surface.
3. At completion clean entire area of surplus materials and equipment.

3.7 FIELD QUALITY CONTROL

1. Locate testing area in building to establish standard of workmanship, texture, gloss and coverage where designated.
2. Apply samples of all finishes on each type of surface to be coated with correct material, number of coats, colour, texture and degree of gloss required.
3. Retain test area until completion of work. Use approved work in test areas as standard for corresponding work throughout building. Correct and refinish work which does not compare with approved finishes.

3.8 **FINISH SCHEDULE**

1. Finish the listed exposed surfaces, wherever they occur unless such surfaces are specifically noted to be left unfinished.
2. Exposed means visible in the completed work and includes the interior of closets, cabinets and drawers.
3. The Consultant shall have the option of having wood painted or with transparent finish and of which finish shall be used.
4. In instances where materials specified are not suitable for a particular job application, or are contrary to manufacturer's recommendations for use on a particular surface, such condition shall immediately be brought to the attention of the Consultant for clarification and instructions.
5. Finishes shall match approved samples but Consultant reserves the right to make reasonable changes to finish specifications to obtain desired results without additional cost or obligation of Owner.
6. A colour chart giving colour schemes for various areas will be prepared after tendering, by the Consultant. The final selection of colours and surface textures of all finishes throughout and whether finishes are transparent (natural) or opaque (paint) shall rest solely with the Owner and Consultant.
7. Where surfaces have been disturbed the entire plane shall be painted.
8. Interior Schedule:
 1. Gypsum Wallboard:
 1. One coat latex super adherent primer.
 2. Two coats interior paint (walls and ceiling where applicable).
 2. Metal:
 1. One coat latex super adherent primer.
 2. Two coats interior paint (epoxy).
 3. Surfaces already primed need not receive field prime coat except for touch up.
 3. Galvanized Steel:
 1. One coat galvanized primer.
 2. Two coats of galvanized Finish Coat.
9. Exterior Schedule:
 1. Metal:
 1. One coat rust inhibitive primer.
 2. Two coats exterior paint.

3. Surfaces already primed need not receive field prime coat except for touch up.

Note: All pipes, conduit, vents, ducts, grilles, pipe insulation, etc. to be painted.

2. Galvanized Steel:

1. One coat galvanized primer.
2. Two coats of galvanized Finish Coat.

Note: All exterior areas are to be painted including access ladders, masonry lintels, etc.

3. Painted Wood Surfaces:

1. One coat exterior wood primer.
2. Two coats exterior paint.

10. General Notes

1. See drawings for locations of areas where more than one colour occurs on one wall and one ceiling plane.
2. Each ceiling bulkhead section or level may be a different colour.
3. Wall planes may be designated a different colour from surrounding walls such as an accent wall,
4. Door frames may be one colour and door another colour. Coordinate with Exterior and Interior Finish Schedule.

3.9 WOOD FURNITURE FINISHES (By Section 06400)

1. Natural or Stained Transparent Wood Furniture Finish: One coat non-bleeding alkyd stain. One coat sanding sealer. Two coats polymerizing two component catalytic conversion varnish system. "Duravar Plus" manufactured by M.L. Campbell and distributed by W. E. Saunders & Sons Painters Ltd. (519-582-2621) , Or approved alternative. Flat, stain or gloss finish as directed by Consultant.
2. Interior of Wood Drawers: Three coats tinted sealer to inside sides, back and bottom.
3. Unexposed Millwork Surfaces: Two coats of tinted sealer including backs of all base and wall cabinets, enclosures, etc.

3.10 MAINTENANCE MATERIAL

1. Provided one sealed can of four-liter capacity, of each product in each colour used in the Work for Owner's use in maintenance work.
2. Container to be new fully labelled with manufacturer's name, type of paint, and colour.
3. Provide Owner 3 copies of paint formula for each colour and type of paint for Owner's maintenance manual.

3.11 CLEAN-UP

1. Clean in conformance with Division 1 General Requirements.

2. Retouching: Do all retouching, etc. to ensure that the building may be handed over to the Owner in perfect condition, free of spatter, finger prints, rust, watermarks, scratches, blemishes or other disfiguration.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:** Provide all labour, materials, equipment and incidental services necessary for interior signage as specified herein.

1.2 REFERENCES & QUALIFICATIONS

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaw, the Ontario Ministry of Labour and the City of Brantford's Facility Accessibility Design Standards – all as currently amended.
2. **Qualifications:** Manufacturer to have not less than 5 successive years of experience in the manufacturer of interior building signs.
3. **References:** CAN/CSA-B651-95; Standard for Barrier-Free Design.

1.3 SUBMITTALS

1. Provide submittals in accordance with Section 01300 – Submittals.
2. **Product Data:**
 1. For all products specified herein, including product data, manufacturer's specifications, storage and handling requirements and recommendations, preparation and installation instructions, adjustment and alignment procedures and any special procedures.
3. **Shop Drawings:**
 1. Before shop drawings and fabrication is started, take critical measurements at the site to facilitate installation and fitting of work.
 2. Shop drawings shall be of best quality craftsmanship, incorporating specific job details not generic details.
 3. Shop drawings that are submitted are to be in the units of the tendered drawings, metric is mandatory with imperial as additional alternate is acceptable.
 4. Provide shop drawings with complete schedule of signs.
 5. Show all locations required, construction methods, joints, termination details, hardware, etc. Indicate layout, size and description of components, base material, surface finish inside and out, hardware and locks, anchorage.
 6. No fabrication and or installation shall commence until all shop drawings have been reviewed.
 7. Materials / products that have been installed on site that are not approved / reviewed / as specified, will be removed.

4. Samples:

1. Provide one sign representative of type specified in appropriate size and colour.

5. Mock Ups: N/A

1.4 MAINTENANCE DATA & MATERIALS

1. N/A

1.5 ALLOWANCES

1. N/A

1.6 DELIVERY & STORAGE

1. Arrange for early deliveries necessary for execution of work without delay and have materials on job well in advance of the time it is needed to avoid construction delays.
2. Delivery to the job site shall be coordinated by the General Contractor. Deliver, store and handle materials to exclude foreign material and prevent damage, soiling or breakage. Materials stored on site which need to be protected from weather shall be so protected. Store in a secure and dry location until installation can proceed.
3. All items to be packaged and labelled with description of contents along with numbering or nomenclature used on shop drawings and bearing brand and manufacturer's name. Each item is to be individually wrapped in protective crating or packaging complete with all fittings and accessories as required.
4. Storage of any material on or off the site is the responsibility of the Contractor.

1.7 SPECIAL PROTECTION

1. Provide adequate protection of materials and work of this Section from damage
2. Protect the work of other sections from damage resulting from work of this section and protect the work of this section from damage resulting from work of other sections. Make good such damage to the satisfaction of the Consultant.
3. Contractor to exercise protective treatment and other precautions required through the construction period, to ensure that items listed will be without damage or deterioration other than normal weathering and wear.
4. If items are damaged / soiled as noted above, items are to be replaced / repaired at contractor's expense, not extra cost to the contract.
5. Consult with section of work soiled before cleaning to ensure methods used will not damage their work.
6. All patching and repair due to damage by other subcontractors, shall be performed under this section and paid for by the subcontractor responsible for the damage.

1.8 **WARRANTY**

1. The work and materials of this section shall be warrantied in accordance with GC 12.3 of CCDC Document 2 and SC 3.44 of the City of Brantford's Supplementary Conditions, most current issuance but for a period of 2 (two) years from the date of Consultant's Certificate of substantial completion.

1.4 **SEQUENCING & SCHEDULING**

1. Ensure all work is installed and completed that will be concealed by this work.
2. The Contractor shall cooperate in the coordination and scheduling of the product to avoid delays in job progress.
3. Coordinate the Work of this Section with the work of all other Sections in accordance with the General Instructions.

1.5 **PROJECT SITE CONDITIONS (ENVIRONMENTAL CONDITIONS)**

1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.6 **TESTING & INSPECTION**

1. N/A

PART 2 - PRODUCTS

2.1 **INTERIOR SIGNS – DOOR LEAF MOUNTED**

1. Pictogram Signs:
 1. Material: various size, 6mm thick acrylic non glare clear back panel with raised tactile letters, numerals, and graphics / pictograms. Pictograms to be cut from 1mm thick Rowmark Alternative® (alternate 3D UV Printing), or approved alternative, to match SW 7007 Ceiling Bright White with second surface painted SW 7069 Iron Ore.
 2. Graphics and Letters: text and pictograms to be various sizes as indicated on drawings. Font to be Candara in small caps.
2. Braille: Grade one (1) braille to be provided on all wall mounted signs, translating all letters showed on the sign.
 1. For gender related signs, where gender is indicated by pictograms, braille translation shall include the gender as well.
 2. For accessible signs, braille translation barrier-free accessible as well.
 3. Braille translation shall be clear round dot with a base Ø 0.5mm as per ADA Standards and City of Brantford's Facility Accessibility Design Standards and applied to the surface. Pictograms to be raised min. 1mm with no sharp edges.

PART 3 - EXECUTION

3.1 EXAMINATION

1. The Contractor shall, together with any and all other subcontractors involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
2. Contractor shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the subcontractor for correction prior to commencing the work of this section.
3. Commencement of the work of this section shall imply acceptance of all surfaces and conditions.
4. Proceed with installation only after unsatisfactory conditions have been corrected.
5. Verify that the opening sizes and tolerances are acceptable.

3.2 PREPARATION

1. Clean surfaces thoroughly prior to installation.

3.1 INSTALLATION

1. Install in accordance with manufacturer's installation instructions and recommendations along with approved submittals.
2. Refer to architectural detail drawing for additional signage requirements and details.
3. Install signage in accordance with CAN/CSA-B651.
4. Signage to be installed via aluminum retainer (hidden) unless otherwise indicated on drawings square and level at location as indicated on drawings, at 1500mm o.c. above finished floor.
5. Do not remove protective films until time of final cleaning immediately prior to final inspection.
6. All signs shall be certified by qualified sign installer and shall be safely and securely anchored/attached.
7. Coordinate all signage locations with Owner and the Consultant and provide stamped shop drawings prior to installation.

3.3 ADJUSTMENT

1. Adjust installation so it is level and plum.

3.4 CLEAN-UP

1. Clean in conformance with Division 1 General Requirements.
2. Clean exposed surfaces using methods acceptable to the manufacturer which will not damage finish.

3. Repair finishes damaged during installation, restore finishes so no evidence remains of corrective work.
4. Remove and replace work that cannot be satisfactorily repaired.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:** Coordinate all locations shown on drawings and for all items located herein. Supply and install all lockers including clothes rod and door hardware (padlock not included).

1.2 REFERENCES & QUALIFICATIONS

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaw and the Ontario Ministry of Labour - all as currently amended.
2. **Qualifications:** Installation shall be only by the specified manufacturer or an authorized representative dealer for the region. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this section.

1.3 SUBMITTALS

1. Provide submittals in accordance with Section 01300 – Submittals.
2. **Product Data:**
 1. For all products specified herein, including product data, manufacturer's specifications, storage and handling requirements and recommendations, preparation and installation instructions.
2. **Shop Drawings:**
 1. Shop drawings shall be submitted by the specified approved manufacturers only.
 2. Before shop drawings and fabrication is started, take critical measurements at the site to facilitate installation and fitting of work.
 3. Shop drawings shall be of best quality craftsmanship, incorporating specific job details not generic details.
 4. Shop drawings that are submitted are to be in the units of the tendered drawings, metric is mandatory with imperial as additional alternate is acceptable
 5. All colour selections to be from the manufacturer's full list of standard colours (coordinate with Exterior and Interior Finish Schedule).
 6. Show all locations required, construction methods, joints, termination details, hardware, etc. Indicate layout, size and description of components, base material, surface finish inside and out, hardware and locks, anchorage.
7. **Samples:** N/A
8. **Mock-ups:** N/A

1.4 **MAINTENANCE DATA & MATERIALS**

1. Data: Provide maintenance data in Operation and Maintenance Manual.
2. Materials: N/A

1.5 **ALLOWANCES**

1. N/A

1.6 **DELIVERY & STORAGE**

1. Arrange for early deliveries necessary for execution of work without delay and have materials on job well in advance of the time it is needed to avoid construction delays.
2. Delivery to the job site shall be coordinated by the General Contractor. Deliver, store and handle materials to exclude foreign material and prevent damage, soiling or breakage. Materials stored on site which need to be protected from weather shall be so protected. Store in a secure and dry location until installation can proceed.
3. All items to be packaged and labelled with description of contents along with numbering or nomenclature used on shop drawings and bearing brand and manufacturer's name. Each item is to be individually wrapped in protective crating or packaging complete with all fittings and accessories as required.
4. Storage of any material on or off the site is the responsibility of the contractor.

1.7 **SPECIAL PROTECTION**

1. Provide adequate protection of materials and work of this Section from damage by on site storage, weather, construction activities and other causes.
2. Protect the work of other sections from damage resulting from work of this section and protect the work of this section from damage resulting from work of other sections. Make good such damage to the satisfaction of the Consultant.
3. Contractor to exercise protective treatment and other precautions required through the construction period, to ensure that items listed will be without damage or deterioration other than normal weathering and wear.
4. If items are damaged / soiled as noted above, items are to be replaced / repaired at contractor's expense, not extra cost to the contract.
5. Consult with section of work soiled before cleaning to ensure methods used will not damage their work.
6. All patching and repair due to damage by other subcontractors, shall be performed under this section and paid for by the subcontractor responsible for the damage.

1.8 **WARRANTY**

1. The work and materials of this section shall be warrantied in accordance with GC 12.3 of CCDC Document 2 and SC 3.44 of the City of Brantford's Supplementary Conditions, most current issuance, but for a period of **two (2) years** from the date of the Consultant's Certificate of Substantial Completion against defective parts and workmanship, excluding vandalism and improper installation.

1.9 SEQUENCING & SCHEDULING

1. Ensure all work is installed and completed that will be concealed by this work.
2. The Contractor shall cooperate in the coordination and scheduling of the product to avoid delays in job progress.
3. Coordinate the Work of this Section with the work of all other Sections in accordance with the General Instructions.

1.10 PROJECT SITE CONDITIONS (ENVIRONMENTAL CONDITIONS)

1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 - PRODUCTS

2.1 MATERIALS

1. Hadrian Emperor corridor lockers, free-standing, single door, full height. Or approved alternative.
 1. Size: 457.2mm (18") depth x 304.8mm (12") width x 1830mm (72") height
 2. Quantity: 10
 3. Colour: Charcoal (500006-545) or Bordeaux (500006-607). Final selection to be confirmed by the Contractor with the Owner and Consultant prior to finalizing procurement.

2.2 ACCESSORIES

1. All locker parts shall be made of new cold rolled sheet steel free from surface imperfections and contaminants.
2. Doors: Double-pan design with min. 20-gauge outer panel and min. 24-gauge inner panel with 1" cell honeycomb core bonded to inner surfaces. The door shall be flush with the frame and include a recessed handle and recessed number plate. Doors are to be hinged on the right and swing from left to right.
3. Door Frames: Vertical members to be min. 16-gauge and formed into a rigid channel. Top and bottom cross members to be min. 18 gauge formed as an open box channel and welded to the verticals. The latch vertical member shall include a welded 11-gauge padlock hasp together with a 7/16" O.D. air-cushioned rubber bumper. No fasteners shall be exposed on fronts of locker doors and frames.
4. Body: Sides and backs to be min. 24-gauge and should not contain extra unnecessary holes unless otherwise specifically used for the assembly of the lockers and accessories on the project. Edges shall be formed to provide a strong and rigid assembly when riveted together. Locker backs are flanged at right angles providing a triple thickness of metal at the back corner connections. Shelves, tops and bottoms shall be interchangeable; not less than 22-gauge and formed into a sturdy pan with a lip formed front edge (all edges) for additional strength and safety. The locker bottom shall have a 16 gauge support bracket installed across the centre.

5. Latching / Locking Device – Single Point: 11-gauge 2" x ¾" padlock hasp securely welded to the continuous strike midway up on the frame and centered at the handle location. ½" O.D. nylon friction catch shall be installed on the door to engage the frame in four (4) locations.
6. Hinge: Full-length 18-gauge continuous piano hinge securely welded to the frame and fastened to the door with screws or rivets.
7. Ventilation: 4 sets of 5 unobstructed louvers ¾" wide x ¼" high in the vertical frame members. Provide 18 - 3/16" diameter perforations at outside perimeter of each top, shelf, and bottom to offer additional ventilation throughout the inside of each locker
8. Number Plate: Each door to have a high strength black laminated plastic number plate, 2 ½" wide x 1 1/8" high with white numbers not less than 7/16" high. Plates shall be nestled in a recess flush with door surface and shall be fastened to door with two rivets. Unless otherwise specified, lockers will be numbered consecutively from 1.
9. Interior Equipment: Standard equipment in the single-tier locker shall be one hat shelf and three single prong coat hooks. All hooks are chrome plated steel with ball point heads and attached to shelves with two fasteners.
10. Box Bases: Galvanneal steel, 89mm height and recessed 44mm from the locker front to allow for toe space and protection against damage from cleaning
11. Sloped Tops: 20 gauge installed on all units, including corners infill and end panels along with any support / clip pieces where applicable.
12. Finish: All steel parts and aluminum pedestals shall be thoroughly machine cleaned, phosphatised, and finished with a high-performance epoxy powder coating, baked on to provide a uniform, smooth, protective finish.
13. Colour (Interior & Exterior): All parts & surfaces are to be finished in standard Light Grey #535.
14. Supply and install all fasteners, anchors, end panels, filler panels, clips, and accessories required for the erection and complete and proper installation.

2.3 **FABRICATION**

1. Assembly by riveting. Rivets provide solid permanent fastening but allow for faster removal by drilling where future rearrangement of lockers or replacement of damaged parts may be required.

PART 3 - EXECUTION

3.2 **EXAMINATION**

1. The Contractor shall, together with any and all other subcontractors involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
2. Contractor shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the subcontractor for correction prior to commencing the work of this section.
3. Commencement of the work of this section shall imply acceptance of all surfaces and conditions.

4. Proceed with installation only after unsatisfactory conditions have been corrected.
5. Verify that the opening sizes and tolerances are acceptable.

3.3 PREPARATION

1. Clean surfaces thoroughly prior to installation.

3.4 INSTALLATION

1. Install in accordance with manufacturer's installation instructions and recommendations.
2. Dissimilar metals in contact or metals and masonry or concrete, when necessary to prevent corrosion, to be insulated one from another by methods and materials required for such results, as approved by the Consultant.
3. Accurately position lockers as detailed on Drawings
4. Safely and securely anchor all lockers properly to walls and/or floors as required. Use fasteners appropriate to load and the substrate.
5. Test and ensure proper and smooth operation and make necessary adjustments until satisfactory results are obtained.
6. Attach number plates in sequence after all lockers have been installed.

3.1 ADJUSTMENT

1. Test door, hardware and operating assemblies for smooth and noiseless operation, make necessary adjustments until satisfactory results are obtained.
2. Re-adjust doors and hardware for correct function just prior to completion of the building to function freely and properly.

3.2 CLEAN-UP

1. Clean in conformance with Division 1 General Requirements.
2. Clean exposed surfaces using methods acceptable to the manufacturer which will not damage finish.
3. Repair finishes damaged during installation, restore finishes so no evidence remains of corrective work.
4. Test door, hardware and operating assemblies for smooth and noiseless operation, make necessary adjustments until satisfactory results are obtained.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:** Coordinate all locations shown on drawings and for all items located herein.

1.2 REFERENCES & QUALIFICATIONS

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaw, the Ontario Ministry of Labour and City of Brantford's Facility Accessibility Design Standards - all as currently amended.

1.3 SUBMITTALS

1. Provide submittals in accordance with Section 01300 – Submittals.
2. Product data:
 1. Products specified herein, including product data, manufacturer's specifications, storage and handling requirements and recommendations, preparation and installation instructions.
2. Shop Drawings:
 1. Shop drawings shall be submitted by the specified approved manufacturers only.
 2. Before shop drawings and fabrication is started, take critical measurements at the site to facilitate installation and fitting of work.
 3. Shop drawings shall be of best quality craftsmanship, incorporating specific job details not generic details.
 4. Shop drawings that are submitted are to be in the units of the tendered drawings, metric is mandatory with imperial as additional alternate is acceptable.
 5. 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 anchors for grab bars.
6. Samples: N/A
7. Mockups: N/A

1.4 MAINTENANCE DATA & MATERIALS

1. Data: Provide maintenance data in Operation and Maintenance Manual.
2. Materials: N/A

1.5 ALLOWANCES

1. N/A

1.6 DELIVERY & STORAGE

1. Arrange for early deliveries necessary for execution of work without delay and have materials on job well in advance of the time it is needed to avoid construction delays.
2. Delivery to the job site shall be coordinated by the General Contractor. Deliver, store and handle materials to exclude foreign material and prevent damage, soiling or breakage. Materials stored on site which need to be protected from weather shall be so protected. Store in a secure and dry location until installation can proceed.
3. Store in manufacturers unopened packing labelled with description of contents along with numbering or nomenclature used on shop drawings and bearing brand and manufacturer's name in a secure, dry and warm, free from dust and water location in accordance with manufacturer's printed directions / instructions until installation can proceed. Inspect product upon receipt and report damaged material immediately to delivering carrier and note such damage on the carrier's freight bill of lading.
4. All items to be packaged and labelled with description of contents along with numbering or nomenclature used on shop drawings and bearing brand and manufacturer's name. Each item is to be individually wrapped in protective crating or packaging complete with all fittings and accessories as required.
5. Storage of any material on or off the site is the responsibility of the contractor.

1.7 SPECIAL PROTECTION

1. Provide adequate protection of materials and work of this Section from damage by on site storage, weather, construction activities and other causes.
2. Protect the work of other sections from damage resulting from work of this section. Protect the work of this section from damage resulting from work of other sections. Make good such damage to the satisfaction of the Consultant.
3. Contractor to exercise protective treatment and other precautions required through the construction period, to ensure that items listed will be without damage or deterioration other than normal weathering and wear.
4. If items are damaged / soiled as noted above, items are to be replaced / repaired at Contractor's expense, not extra cost to the contract.
5. Consult with section of work soiled before cleaning to ensure methods used will not damage their work.
6. All patching and repairs due to damage by other subcontractors shall be performed under this section and paid for by the subcontractor responsible for the damage.

1.8 WARRANTY

1. The work and materials of this section shall be warrantied in accordance with GC 12.3 of CCDC Document 2 and SC 3.44 of the City of Brantford's Supplementary Conditions, most current issuance.

1.9 SEQUENCING & SCHEDULING

1. Ensure all work is installed and completed that will be concealed by this work.
2. The Contractor shall cooperate in the coordination and scheduling of the product to avoid delays in job progress.

1.10 **PROJECT SITE CONDITIONS (ENVIRONMENTAL CONDITIONS)**

1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by the manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 - PRODUCTS

2.1 **MATERIALS**

1. Sheet Steel: Commercial grade, stretcher levelled sheet steel to ASTM A526-71 (1975) with G90 zinc coating to ASTM A525-79.
2. Stainless Steel Sheet: To ASTM A666-72 (1979) type 302 with No. 4 finish, minimum 0.9 mm (0.036"/20 gauge).
3. Stainless Steel Tubing: AISI Type 304, commercial grade, seamless welded, 1.2mm (0.047") wall thickness.
4. Fasteners: Screws and bolts stainless steel. Expansion shields, lead or rubber as recommended by the fixture manufacturer for component and its intended use.

2.2 **FINISHES**

1. Chrome and Nickel Plating: to ASTM B456-79 satin finish.
2. Stainless Steel: to AISI No. 4 satin luster finish.
3. Baked enamel: condition metal by applying one coat of metal conditioner to CGSB 31-GP-107a, apply one coat Type 2 primer to CGSB 1-GP-81M, and bake apply two coats Type 2 enamel to CGSB 1-GP-88e and bake to hard, durable finish. Sand between final coats. Colour to be selected by the Owner from manufacturer's full standard range of colours and finishes.

2.3 **KEYING**

1. All accessories to be keyed alike. Provide four keys.

2.4 **ACCESSORIES**

1. Double Coat Hooks (CH2): Bobrick, Model B-76727 Surface Mounted Double Robe Hook, stainless steel, satin finish. Or approved alternative. Provide one at locations as indicated on drawings.
2. Grab Bars:
 1. At Universal and Barrier Free Accessible Water Closets:
 1. Grab Bar (GB1): Bobrick, Model B-6898.99, stainless steel, satin finish, peened finish, L-shaped bar 38mm (1 1/2") diameter, 760mm (30") long horizontal and 760mm (30") long vertical, snap flange covers, at side of water closet. Or approved alternative.
 2. Grab Bar (GB2): Bobrick, Model B-6806.99 x 24, stainless steel, satin finish, peened finish, 38mm (1 1/2") diameter, 610mm (24") long straight bar, snap flange covers, at back of water closet. Or approved alternative.

2. At Barrier Free Accessible Shower:

1. Grab Bar (GB3): Bobrick, Custom Length / Size, stainless steel, satin finish, peened finish, L-shaped bar 38mm (1 1/2") diameter, 900mm(36") long horizontal and 900mm (36") long vertical, snap flange covers, on opposite of the entrance to the shower. Or approved alternative.
2. Grab Bar (GB4): Bobrick, Model B-6806.99 x 42, stainless steel, satin finish, peened finish, 38mm (1 1/2") diameter, 1000mm (42") long straight bar, snap flange covers. Or approved alternative.

Note: Grab bars to be 18 gauge (1.24mm) stainless steel tubing, with Mandrel bends. Knurled and peened finish for full length of the tubing to within 100mm (4") of ends of bends. Secure concealed fastening grab bars with 64mm (2 1/2") No. 14 screws to solid backing, capable of supporting a 500 lb. (225 kg) pull.

Note: Grab bars mounted to washroom partitions to have Bobrick Grab Bar Anchors, 258 Series mounting plates installed where not mounted back-to-back. Or approved alternative.

3. Shower Rings and Curtain (SHC): Bobrick, Model B-204-1 Stainless Steel Shower Curtain Hook and Model B-204-2/3 Vinyl Shower Curtains – bath / shower curtain (coordinate with plans for width of bath / shower curtain). Or approved alternative. Provide at each shower location and ancillary clear floor shower space associated with the shower stall and at locations as indicated on drawings.
4. Shower Rod (SHR): Bobrick, Model B-6047–Length Classic Series Extra Heavy Duty Shower Curtain Rod, 18 gauge heavy duty 2" (50mm) dia. Bath/shower rod by length of opening, complete with concealed stainless steel flanges. Or approved alternative. Provide at each shower location and ancillary clear floor shower space associated with the shower stall and at locations as indicated on drawings.
5. Shower Seat: American Specialties Inc (ASI), Model No. 8203-M-NZ (Custom Order), phenolic fold up seat, stainless steel, satin finish all metal parts. Or approved alternative. Provide one at each barrier free accessible shower.
6. Corner Shower Shelves (CSS): Kohler, Shower Baskets, Small K-1898 and Medium K-1896. Or approved alternative. Provide 3 at each shower location as indicated on drawings.
7. Towel Bar (TOB): Bobrick, Model B-6806.99 x 24 38mm Diameter Stainless Steel Grab Bars with Snap Flange, stainless steel, satin finish, peened finish, 38mm (1 1/2") diameter, 610mm (24") long straight bar, snap flange covers, at each shower location where there is an ancillary clear floor shower space associated with the shower stall and at locations as indicated on drawings. Or approved alternative.
 1. Towel bars to be 18 gauge (1.24mm) stainless steel tubing, with Mandrel bends. Knurled and peened finish for full length of the tubing to within 100mm (4") of ends of bends. Secure concealed fastening grab bars with 64mm (2 1/2") No. 14 screws to solid backing, capable of supporting a 500 lb. (225 kg) pull.
8. Manual Soap Dispensers (SD): Bobrick, Model B-2111 Classic Series Surface-Mounted Soap Dispenser, stainless steel satin finish. Or approved alternative. Provide one at location indicated on drawings.
9. Mirrors: All mirrors to be tempered glass. Install one per washroom lavatory as indicated on drawings.
 1. Fixed Mirror: Bobrick, Model No. B-165-1836 Mirror with Stainless Steel Channel Frame, bright polished finish, 456mm (18") wide x 914mm (36") high. Or approved alternative.

10. Shelf (SHF): Gamco Shelf MS-24 or equal. Wall mounted stainless steel shelf 4" x 24" (100mm x 600mm). Or approved alternative. Provide one at each Universal Washroom at locations indicated on drawings.
11. Surface Mounted Sanitary Napkin Disposal (SND): Bobrick, Model B-270 Contura Series Surface-Mounted Sanitary Napkin Disposal, stainless steel, satin finish. Or approved alternative. Provide one in each universal washroom, barrier free washroom, single washroom, uni-sex washroom and female washroom water closet locations.
12. Surface-Mounted Paper Towel Dispenser (PTD): Bobrick, Model B-4262 Contura Series Surface-Mounted Paper Towel Dispenser with TowelMate (C-Fold and Multifold, 64-97mm), stainless-steel, satin finish. Or approved alternative. Provide one at location indicated on drawings.
13. Surface Mounted Waste Receptacle (GD/WR): Bobrick, Model B-277 Contura Series Surface-Mounted Waste Receptacle with LinerMate, stainless steel, satin finish. Or approved alternative. LinerMate Trash Liner Holder to be installed. Provide one at location indicated on drawings.
14. Toilet Paper Roll Dispenser (TPD): Bobrick, B-4288 Contura Series Surface-Mounted Multi-Roll Toilet Tissue Dispenser (double stackable roll), stainless steel, satin finish. Or approved alternative. Provide one at location indicated on drawings.
15. Contractor to install all items supplied by owner.

2.5 FABRICATION

1. Weld, ground flush and smooth joints of fabricated components. Use mechanical fasteners only when approved.
2. Form exposed surfaces from one sheet of stock, free of joints.
3. Brake form sheet metal with 2mm radius bends.
4. Form flat surfaces without distortion. Maintain flat surfaces without scratches or dents.
5. Paint back of components where contact is made with building finishes to prevent electrolysis.
6. Hot dip ferrous metal anchors and fastening devices to conform with CGSB G164.
7. Shop assemble and package components complete with anchors and fittings.
8. Deliver inserts and rough-in frames to site at appropriate time for building in. Provide templates or rough-in measurements as required.
9. Provide steel anchor plates and components for installation on studding and building framing.
10. All exposed stainless-steel edges to be hemmed.
11. All stainless-steel units to be double panned.

PART 3 - EXECUTION

3.1 EXAMINATION

1. The Contractor shall, together with all other subcontractors involved in the work of this section,

- examine all surfaces or conditions relating to the Work, to determine the acceptability of such surfaces or conditions for the work of this section to commence.
2. Contractor shall report, in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the subcontractor for correction prior to commencing the work of this section.
3. Commencement of the work of this section shall imply acceptance of all surfaces and conditions.
4. Proceed with installation only after unsatisfactory conditions have been corrected.
5. Verify that the opening sizes and tolerances are acceptable.

3.2 PREPARATION

1. Clean surfaces thoroughly prior to installation.

3.3 INSTALLATION

1. Install in accordance with manufacturer's installation instructions and recommendations.
2. Installation as per washroom equipment mounting heights guidelines as shown on drawings, or as directed and confirmed by the Consultant.
3. Install all items to secure backing (install blocking as required in wall substrates) with product mounting kits applicable to wall substrates.
4. Securely fasten accessories level and plumb in the locations shown on the drawings and as specified herein.
5. Co-ordinate installation with the work of trades providing adjacent construction as required to achieve the reveals or other edge conditions shown where front faces of units are flush with the finished wall surfaces.
6. Perform drilling of steel, masonry and concrete necessary to install the accessories.
7. Insulate accessory surfaces to prevent electrolysis due to contact with masonry, concrete or dissimilar metal surfaces. Use bituminous paint, building paper or other approved means.

3.1 ADJUSTMENT

1. Test and ensure proper and smooth operation and make necessary adjustments until satisfactory results are obtained.
2. Re-adjust doors and hardware for correct function just prior to completion of the building to function freely and properly.

3.4 CLEAN-UP

1. Clean all accessories in conformance with Division 1.

2. Clean exposed surfaces using methods acceptable to the manufacturer which will not damage finish.
3. Repair finishes damaged during installation, restore finishes so that no evidence remains of corrective work.
4. Remove and replace work that cannot be satisfactorily repaired.

END OF SECTION

PART 1 – GENERAL

1.1 **SUMMARY**

1. **General Requirements:** Division One General Requirements form part of this Section and shall apply as if repeated here.
2. **Scope of Work Description:** Coordinate all locations shown on drawings and for all items located herein.

1.2 **REFERENCES & QUALIFICATIONS**

1. Conform to the latest Ontario Building Code, The Construction Safety Act, Local Bylaw and the Ontario Ministry of Labour - all as currently amended.

1.3 **SUBMITTALS**

1. Provide submittals in accordance with Section 01300 – Submittals.
2. **Product Data:**
 1. For all products specified herein, including product data, manufacturer's specifications, storage and handling requirements and recommendations, preparation and installation instructions, adjustment and alignment procedures and any special procedures.
2. **Shop drawings:**
 1. Fabrication drawings shall be stamped by a Professional Engineer registered in the Province of Ontario.
 2. Shop drawings shall be submitted by the specified manufacturer only.
 3. Before shop drawings and fabrication is started, take critical measurements at the site to facilitate installation and fitting of work.
 4. Shop drawings shall be of best quality craftsmanship, incorporating specific job details not generic details.
 5. Shop drawings that are submitted are to be in the units of the tendered drawings, metric is mandatory with imperial as additional alternate is acceptable.
 6. Show all locations required, layout, size and description of components, base material, surface finishes, etc., and all other pertinent data and information, along with any other requirements requested by the Consultant.
 7. No fabrication and or installation shall commence until all shop drawings have been approved.
 8. Materials / products that have been installed on site that are not approved / reviewed / as specified, will be removed.
9. **Samples:** N/A
10. **Mock Ups:** N/A

1.4 MAINTENANCE DATA & MATERIALS

1. Data: Provide maintenance data in Operation and Maintenance Manual.
2. Materials: N/A

1.5 ALLOWANCES

1. N/A

1.6 DELIVERY & STORAGE

1. Arrange for early deliveries necessary for execution of work without delay and have materials on job well in advance of the time it is needed to avoid construction delays.
2. Delivery to the job site shall be coordinated by the General Contractor. Deliver, store and handle materials to exclude foreign material and prevent damage, soiling or breakage. Materials stored on site which need to be protected from weather shall be so protected. Store in a secure and dry location until installation can proceed.
3. Store in manufacturers unopened packing labelled with description of contents along with numbering or nomenclature used on shop drawings and bearing brand and manufacturer's name in a secure, dry and warm, protected with adequate ventilation, free from dust and water location in accordance with manufacturer's printed directions / instructions until installation can proceed. Inspect product upon receipt and report damaged material immediately to delivering carrier and note such damage on the carrier's freight bill of lading.
4. All items to be packaged and labelled with description of contents along with numbering or nomenclature used on shop drawings and bearing brand and manufacturer's name. Each item is to be individually wrapped in protective crating or packaging complete with all fittings and accessories as required.
5. Storage of any material on or off the site is the responsibility of the contractor.

1.7 SPECIAL PROTECTION

1. Provide adequate protection of materials and work of this Section from damage by on site storage, weather, construction activities and other causes.
2. Protect the work of other sections from damage resulting from work of this section and protect the work of this section from damage resulting from work of other sections. Make good such damage to the satisfaction of the Consultant.
3. Contractor to exercise protective treatment and other precautions required through the construction period, to ensure that items listed will be without damage or deterioration other than normal weathering and wear.
4. If items are damaged / soiled as noted above, items are to be replaced / repaired at contractor's expense, not extra cost to the contract.
5. Consult with section of work soiled before cleaning to ensure methods used will not damage their work.
6. All patching and repair due to damage by other subcontractors, shall be performed under this section and paid for by the subcontractor responsible for the damage.

1.8 **WARRANTY**

1. The work and materials of this section shall be warrantied in accordance with GC 12.3 of CCDC Document 2 and SC 3.44 of the City of Brantford's Supplementary Conditions, most current issuance, but for a period of **2 (two)** years from the date of Consultant's Certificate of Substantial Completion.

1.9 **SEQUENCING & SCHEDULING**

1. Ensure all work is installed and completed that will be concealed by this work.
2. The Contractor shall cooperate in the coordination and scheduling of the product to avoid delays in job progress.
3. Coordinate the Work of this Section with the work of all other Sections in accordance with the General Instructions.

1.10 **PROJECT SITE CONDITIONS (ENVIRONMENTAL CONDITIONS)**

1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by the manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.11 **TESTING & INSPECTION**

1. N/A

PART 2 - PRODUCTS

2.1 **MATERIALS**

1. **CONTROL JOINT COVERS:**

1. Provide control joint cover types equal to C/S Construction Specialties Ltd. as required.
 1. New floor to new floor equal to model GFT-100 control joint.
 2. New floor to new wall equal to model GFTW-100 control joint.

2. **EXPANSION JOINTS:**

1. Provide expansion joint cover types equal to C/S Construction Specialties Ltd., or approved alternative, as required.
 1. Wall to wall (flat) equal to Model ASM-100, 1" (25mm), ASM-200, 2" (50mm), ASM-300, 3" (75mm), PASM-400, 4" (100mm), joint cover. Install fire barrier (FB) at rated assemblies.
 2. Wall to wall (inside corner) equal to Model ASMC-100, 1" (25mm), ASMC-200, 2" (50mm), ASMC-300, 3" (75mm), ASMC-400, 4" (100mm), joint cover. Install fire barrier (FB) at rated assemblies.
 3. New floor to new floor (flat) equal to Model ALS-100, 1" (25mm), ALS-200, 2" (50mm), ALS-300, 3" (75mm), ALS-400, 4" (100mm), expansion joint. Install fire barrier (FB) at rated assemblies.
 4. New floor to new wall (Inside corner) equal to Model ALSW-100, 1" (25mm), ALSW-200, 2" (50mm), ALSW-300, 3" (75mm), ALSW-400, 4" (100mm), expansion joint. Install fire barrier (FB) at rated assemblies.

2. Provide FB-88 prefabricated 1-hour fire barrier assembly tested in accordance with ASTM-E119 and NFPA No. 251 procedures at all floor to floor and floor to wall locations.
3. At wall to wall fire rated locations do not install joint cover until fire stopping is complete / installed by fire stopping Contractor.

3. BOLLARD:

1. Provide steel bollards in quantity as shown on Site Plan Drawing C101 and floor plans. Coordinate with installation detail on C101.
2. Product to be 152mm dia. Galvanized steel pipe bollard, 2385mm long filled w/ concrete. Provide Sureguard yellow HDPE bollard cover.

PART 3 – EXECUTION

3.1 EXAMINATION

1. The Contractor shall, together with any and all other subcontractors involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
2. Contractor shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the subcontractor for correction prior to commencing the work of this section.
3. Commencement of the work of this section shall imply acceptance of all surfaces and conditions.
4. Proceed with installation only after unsatisfactory conditions have been corrected.
5. Verify that the opening sizes and tolerances are acceptable.

3.2 PREPARATION

1. Clean surfaces thoroughly prior to installation.
2. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

1. Install in accordance with manufacturer's installation instructions and recommendations along with approved submittals and including but not limited to bolts, nuts, hardware, accessories, etc. for a complete installation.
2. Coordinate with mechanical and electrical for any final connections.
3. Dissimilar metals in contact or metals and masonry or concrete, when necessary to prevent corrosion, to be insulated one from another by methods and materials required for such results, as approved by the Consultant.

3.4 CLEAN-UP

1. Clean in conformance with Division 1 General Requirements.

2. Clean exposed surfaces using methods acceptable to the manufacturer which will not damage finish.
3. Repair finishes damaged during installation, restore finishes so no evidence remains of corrective work. Repairs are to be done as directed by the manufacturer.
4. Remove and replace work that cannot be satisfactorily repaired.

END OF SECTION

2026-42 - Construction of Walter Gretzky Golf Course Maintenance Building

Opening Date: April 16, 2026 10:30 AM

Closing Date: May 12, 2026 3:00 PM

Schedule of Prices

Instructions on How to Complete Pricing Form(a) Rates shall be provided in Canadian funds, inclusive of all applicable duties and taxes except for HST.

(b) Rates quoted by the bidder shall be all-inclusive and shall include all labour and material costs, all travel and disbursement costs, all insurance costs, and all other overhead, including any fees or other charges required by law.

The Summary Table provides your Sub-Total for each pricing table and also indicates whether or not the table is mandatory. Asterisks within the table denote a "MANDATORY" line item.

If the line item and/or table is "NON-MANDATORY" and you are not bidding on it, leave the table and/or line item blank. Do not enter a \$0.00 dollar value unless you are prepared to provide the line item at zero dollars to the City.

If a table is "NON-MANDATORY" and you are bidding on it, you must bid on all line items with an asterisk.

If there are multiple tables, you must click the "EDIT PRICING" button inside the Summary Table to display the applicable Pricing Table that you wish to bid on.

Pricing Form

a) The City reserves the right to add or delete items or quantities listed in the Pricing Form based on the City's approved budget. The City will not consider claims for an increase or decrease of the total contract amount.

b) The bidder having the lowest contract amount will be recommended for the award of the project.

Line Item	Description	Unit of Measure	Quantity	Unit Price *	Extended Price
1	Division 1 - General Requirements	lump sum	1		
2	Division 2 - Site Construction	lump sum	1		
3	Division 3 - Concrete	lump sum	1		
4	Division 4 - Masonry	lump sum	1		
5	Division 5 - Metals	lump sum	1		
6	Division 6 -Wood and Plastics	lump sum	1		
7	Division 7 - Thermal and Moisture Protection	lump sum	1		
8	Division 8 - Doors and Windows	lump sum	1		
9	Division 9 - Finishes	lump sum	1		
10	Division 10 - Specialties	lump sum	1		
11	Division 15 - Mechanical	lump sum	1		
12	Division 16 - Electrical	lump sum	1		
Subtotal:					

Provisional Items

a) The contract amount shall include a price for the provisional item(s) as identified in the Pricing Form. The City reserves the right to delete any or all provisional items from the lowest bidder's contract amount should it be determined by the City that the work is not required for the project.

Line Item	Description	Unit of Measure	Estimated Quantity	Unit Price *	Extended Price
1	Concrete Pad for Cart Parking as per Servicing Plan drawing C101 and specifications Division 3 – Concrete.	lump sum	1		
2	Windows W2a as per drawings A201 & A300 and per window schedule as well as Section 08556	lump sum	1		
3	Stone Veneer – cost to supply and install stone veneer at the base of the new maintenance building	lump sum	1		
Subtotal:					

Separate Prices

The City reserves the right to add any or all separate price items to the lowest bidder's contract amount should it be determined by the City that the work is required and within project budget.

Separate price Unit Prices should reflect (+/-) difference in cost from base item. These are intended to showcase upgrades/cost savings to the standard listed in the specifications.

Line Item	Description	Unit of Measure	Quantity	Unit Price *	Extended Price
1	Gravel for Cart Parking - in lieu of concrete pad, supply and install gravel pad for cart parking and re-locate existing concrete barriers beside existing Quonset Hut that are currently being used for cart parking.	lump sum	1		
2	Asphalt Shingles in lieu of Pre-Finished Painted Metal roof – as per drawing A003 and Section 07300 – Asphalt Shingles of the specifications. Bidders to show this as one cost to credit the base contract for metal roofing and to add the cost of the asphalt shingles.	lump sum	1		
Subtotal:					

Cash Allowances

All of the bidder's costs relating to cash allowance items, other than the actual purchase, should be included in the total contract amount, not in the allowance. Expenditure of the cash allowance shall be authorized by the Project Manager.

Line Item	Item Description	Quantity	Unit of Measure	Allowance Amount	Extended Price
1	Inspection and Testing	1	lump sum	\$7,500.0000	\$ 7,500.0000
2	Cabinetry	1	lump sum	\$15,000.0000	\$ 15,000.0000
3	Door Hardware	1	lump sum	\$18,000.0000	\$ 18,000.0000
4	Electrical Service & Connections	1	lump sum	\$12,000.0000	\$ 12,000.0000
5	Hazardous Material Removal and Disposal	1	lump sum	\$5,000.0000	\$ 5,000.0000
Subtotal:					\$ 57,500.0000

Summary Table

Bid Form	Amount
Pricing Form	
Provisional Items	
Cash Allowances	\$ 57,500.0000
Subtotal Contract Amount:	

The bidder confirms that the pricing information provided is accurate. The bidder acknowledges that any inaccurate, misleading or incomplete information, including withdrawn or altered pricing, could adversely impact the acceptance of its bid or its eligibility for future work.

References

Provide current references, not to include the City of Brantford, for work of a similar nature (i.e. size and scope) to this project. The City of Brantford may verify references and a negative or poor reference or job completion may, at the City's sole discretion, be sufficient reasons for not negotiating a contract with the bidder.

References

Business Name	Description of Project/Work	Date Work Completed	Project Value	Reference Contact Name & Number	Email Address	
						*
						*
						*

Subcontractors

The bidder shall state all Subcontractor(s) and type of work proposed to be used for this project. Bidders shall not indicate "TBD" (To Be Determined) or "TBA" (To Be Announced) or similar wording and shall not indicate multiple choices of Subcontractor names for any Subcontractor category in their list of Subcontractors. One Subcontractor name shall be indicated for each Subcontractor category.

The bidder shall state only one (1) Subcontractor for each type of work.

Subcontractors

☐ By clicking here I confirm that there are no Subcontractor(s) and the bidder shall perform the project with their "OWN FORCES".

Trade	Business Name & Address	Contact Name & Number

Documents

Ensure your bid submission document(s) conforms to the following:

1. Documents should be in PDF format. Documents should NOT be provided in any other format.
2. Documents should NOT have a security password, as the City may not be able to open the file. It is the bidder's sole responsibility to ensure that their uploaded document(s) are not either defective, corrupted or blank and that the documents can be opened and viewed by the City.
3. The City may reject any submission where any document(s) cannot be opened and viewed by the City.
4. Multiple file responses, if applicable, (e.g. Corporate Profile, Project Lead Experience, Project Examples;) should be merged into one PDF file in the order and format listed in the competitive document and named accordingly. E.g. "Technical Responses"

The respondent shall upload:

- WISR Report from within the last 90 days
- Workplace Injury Summary Report (WISR) * (mandatory)

Addenda, Terms and Conditions

Submission Form

1. Acknowledgement of Terms of Reference and Governing Law

The bidder acknowledges that this competitive process will be governed by the terms and conditions of the competitive document.

2. Ability to Provide Deliverables

The bidder has carefully examined this competitive document and has a clear and comprehensive knowledge of the Deliverables required. The bidder represents and warrants its ability to provide the Deliverables in accordance with the requirements of the competitive document for the rates set out in the completed Pricing Form

3. Prohibited Conduct

The bidder declares that it has not engaged in any conduct prohibited by this competitive process.

4. Confidential Information of Bidder

A bidder should identify any confidential information in its response or any accompanying documentation. The City will make reasonable efforts to safeguard confidential information of bidders, subject to its disclosure requirements under the Municipal Freedom of Information and Protection of Privacy Act or any other disclosure requirements imposed by order of a court or tribunal. The bidder agrees that their bid will, as necessary, be disclosed on a confidential basis to the City's advisers retained to advise or assist with this competitive process, including the review of bids. In addition, the bidder consents to the disclosure of contractual information, including pricing information, which may be disclosed to City Council and, accordingly, may become part of the public record. If a bidder has any questions about the collection and use of information pursuant to this competitive document, questions are to be submitted to the Purchasing Contact.

☐

I/WE agree to be bound by the terms and conditions contained in the bid document and any applicable Addenda, and the person named below has the authority to submit this bid on behalf of the bidder.

Conflict of Interest

For the purposes of this section, the term "Conflict of Interest" includes, but is not limited to, any situation or circumstance where:

- (a) in relation to the bidding process, the bidder has an unfair advantage or engages in conduct, directly or indirectly, that may give it an unfair advantage, including but not limited to (i) having, or having access to, confidential information of the City in the preparation of its bid that is not available to other bidders; (ii) communicating with any person with a view to influencing preferred treatment in the competitive bidding process (including but not limited to the lobbying of decision makers involved in the competitive process); or (iii) engaging in conduct that compromises, or could be seen to compromise, the integrity of the open and competitive process or render that process non-competitive or unfair; or
- (b) in relation to the performance of its contractual obligations under a contract for the Deliverables, the bidder's other commitments, relationships or financial interests (i) could, or could be seen to, exercise an improper influence over the objective, unbiased and impartial exercise of its independent judgement, or (ii) could, or could be seen to, compromise, impair or be incompatible with the effective performance of its contractual obligations.

Bidders must declare all potential Conflicts of Interests which includes disclosing the names and all pertinent details of all individuals (employees, advisers, or individuals acting in any other capacity) who (a) participated in the preparation of the bid; AND (b) were employees of the City within twelve (12) months prior to the Submission Deadline.

If you declare a Conflict of Interest select 'YES' and provide the required details. If no Conflict of Interest exists select 'NO'.

☒ Yes ☐ No

Addenda

The bidder is deemed to have read and accepted all addenda issued by the City prior to the Submission Deadline. The onus is on bidders to make any necessary amendments to their bids based on the addenda.

Please check the box in the column "I have reviewed this addendum" below to acknowledge each of the addenda.

File Name	I have reviewed the below addendum and attachments (if applicable)	Pages
There have not been any addenda issued for this bid.		

