# ELMVALE DISTRICT HIGH SCHOOL
# FAMILY STUDIES KITCHEN RENOVATIONS

**25 Lawson Avenue, Elmvale, Ontario**
**Tender No. 12589T**

Simcoe County District School Board

# ARCHITECTURAL SPECIFICATIONS
# PROJECT MANUAL VOLUME 1


**MOFFET & DUNCAN ARCHITECTS INC.**
**PRIME CONSULTANT**

**CND ENGINEERING LIMITED**
**Structural Engineers**

**DEI CONSULTING ENGINEERS**
**Mechanical & Electrical Engineers**

**Architectural**
Moffet & Duncan Architects Inc.


**Mechanical & Electrical**
DEI Consulting Engineers


The seal above pertains to the specification sections bearing the name of the relevant consultant at the bottom of each page.

## VOLUME 1 ARCHITECTURAL SPECIFICATIONS

Professional Seals Page

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# 1. INTRODUCTION

## 1.1 INVITATION

1.1.1 Simcoe County District School Board (the "**Owner**") is soliciting Bids from prequalified general contractors to perform the work described in the Bid Documents (the "**Work**") at ***Elmvale District High School*** located at ***25 Lawson Avenue, Elmvale, Ontario*** (the "**Place of the Work**").

## 1.2 KEY INFORMATION

1.2.1 This Section provides a summary of some key information contained in the Bid Documents and is provided solely as a convenience. Bidders are urged to read all of the Bid Documents carefully and thoroughly to ensure they fully understand all of the terms and conditions, including all Contract requirements.

(a) The Owner has scheduled a mandatory site meeting at ***Elmvale District High School*** on ***Wednesday, February 10, 2021***, commencing at ***4:00 PM***.

(b) The Owner requires that all Bidders attend the mandatory site meeting.

(i) Please note, due to policies in place for COVID 19, the SCDSB is asking that only one (1) representative from each Bidder attend the mandatory meeting. Attendees are required to take the self-assessment available at: https://covid-19.ontario.ca/self-assessment/ the day of the mandatory meeting prior to arriving and must wear a medical grade face covering while in the building.

(c) The deadline for submitting questions (the **"Question Deadline"**) is 10 days before the Submission Deadline.

(d) Questions must be submitted through the online portal www.bidsandtenders.ca.

(e) Bids must be submitted online through the Portal BEFORE 1:30:00PM Local Time on ***Tuesday, February 23, 2021*** (the "**Submission Deadline**").

(f) Bids must be irrevocable for a period of ninety (90) days starting from the day after the Submission Deadline (the "**Irrevocability Period**").

(g) The form of bid security to be delivered as part of the Bid is a digital bond, no other form of bond is acceptable. Bids submitted without digital bond will be considered noncompliant.

(h) The successful Bidder is permitted to commence work on site as of ***Monday, May 3, 2021***.

(i) The successful Bidder will be required to achieve Substantial Performance of the Work by ***Friday, August 13, 2021***.

(j) The Bid Coordinator is Lori McColman, Assistant Manager of Accounting and Purchasing, at "lmccolman@scdsb.on.ca".

## 1.3 PREQUALIFICATION

1.3.1 The following general contractors are prequalified to submit a Bid (each a "**Prequalified Contractor**"):

(a) Anacond Contracting Inc.;

(b) Aquicon Construction;

(c) Bertram Construction (Ontario) Ltd;

(d) Brown Daniels Associates Inc.;

(e) Deciantis Construction Ltd.;

(f) Devlan Construction Ltd.;

(g) Everstrong Construction Ltd.;

(h) Gateman-Milloy Inc.;

(i) Greystone Project Management Inc.;

(j) JR Certus Construction Co. Ltd.;

(k) Les Bertram & Sons (1985) Ltd.;

(l) Lisgar Construction Company;

(m) M.J. Dixon Construction Ltd.;

(n) Percon Construction Ltd.;

(o) Quad Pro Construction Inc.;

(p) Quinan Construction Ltd.;

(q) R.J.B. Construction (1989) Ltd.;

(r) Rutherford Contracting Ltd.;

(s) Shertine Construction Ltd.;

(t) Silver Birch Contracting Ltd.;

(u) Steelcore Construction Ltd.;

(v) Tambro Construction Ltd.;

(w) W.E. Marshall Construction (1986) Ltd.;

(x) W.S. Morgan Construction Ltd.

1.3.2 Reserved.

1.3.3 Reserved.

1.3.4 Reserved.

1.3.5 The Owner reserves the right to issue one or more addenda naming additional Prequalified Contractors and/or additional prequalified Subcontractors.

1.3.6 Only Prequalified Contractors are eligible to participate in this Bid Process and to submit a Bid. Submissions received from those who are not a Prequalified Contractor will not be considered.

### 1.4 THE BID CONTRACT

1.4.1 The Bidders and the Owner acknowledge it is their intention to create a process contract, sometimes referred to as "Contract A" (the "**Bid Contract**"), between the Owner and each Bidder whose Bid meets all Mandatory Requirements. The Bidders and the Owner further acknowledge that if a Bid Contract is created between the Owner and one or more Bidders, the terms of the Bid Contract are represented by the Bid Documents and include an obligation on the successful Bidder, if any, to sign the Contract.

### 1.5 BIDDERS' EXPENSES

1.5.1 Bidders shall bear all costs and expenses incurred by them in any way related to any aspect of their participation or intended participation in this Bid Process including, without limitation, all costs and expenses related to a Bidder's involvement in:

(a) due diligence, investigations, and information gathering processes;

(b) attendances and/or participation at any and all site visits and/or meetings;

(c) the preparation and submission of a Bid and responding to Requests for Additional Information.

## 2. DEFINITIONS

Capitalized terms used in the Instructions to Bidders and not otherwise defined in this Article or elsewhere in these Instructions to Bidders shall have the meanings ascribed to them in the Definitions to the Contract. All references in the Instructions to Bidders to "Article", "Section" or "paragraph" shall, unless specifically indicated otherwise, refer to an Article, Section or paragraph of these Instructions to Bidders.

2.1.1 **"Adjusted Bid Price"** has the meaning set out in the table in paragraph 10.4.1.

2.1.2 **"Bid"** means all documents and information submitted through and/or uploaded to the Portal by a Bidder in response to and in accordance with these Instructions to Bidders, together with the documents and information specified in Section 9.4 and Section 10.2, where applicable.

2.1.3 **"Bidder"** means a Prequalified Contractor that participates in this Bid Process, whether or not it submits a Bid. The term "**Bidder**" also includes a Prequalified Contractor prior to the submission of its Bid.

2.1.4 **"Bid Contract"** means the contract described in paragraph 1.4.1 for the evaluation of Bids and the execution of the Contract, if any.

2.1.5 **"Bid Coordinator"** is the person identified as such in paragraph 1.2.1(i).

2.1.6 **"Bid Documents"** means the documents listed in paragraph 3.2.1.

2.1.7 **"Bid Price"** has the meaning set out in paragraph 9.2.1.

2.1.8 **"Bid Process"** means the procurement process described in the Bid Documents which commences with the issuance of these Instructions to Proponents and ends on the earliest of the following:

(a) the date on which the Contract is signed;

(b) the date on which the Bid Process is cancelled;

(c) the day after the expiry of the Irrevocability Period.

2.1.9 **"Board"** means the Board of Trustees of the Owner.

2.1.10 **"Conflict of Interest"** has the meaning set out in paragraph 13.2.1.

2.1.11 **"Contract"** means the written agreement to be signed between the Owner and the successful Bidder, in the form of CCDC 2 – 2008 stipulated price contract, as amended by Supplementary Conditions.

2.1.12 Reserved.

2.1.13 **"Irrevocability Period"** has the meaning set out in paragraph 1.2.1(f).

2.1.14 **"Local Time"** means the time measured and recorded on the Portal.

2.1.15 **"Mandatory Requirements"** means the mandatory requirements listed in paragraph 10.3.1.

2.1.16 **"MFIPPA"** means the *Municipal Freedom of Information and Protection of Privacy Act* (Ontario).

2.1.17 **"Owner"** means Simcoe County District School Board and includes its employees, agents, trustees, officers and directors, whether involved with the Bid Process or not, and includes the Board.

2.1.18 **"Place of the Work"** has the meaning set out in paragraph 1.1.1.

2.1.19 **"Portal"** has the meaning set out in paragraph 3.1.1.

2.1.20 **"Prequalified Contractor"** has the meaning set out in paragraph 1.3.1.

2.1.21 **"Question Deadline"** is the date identified as such in paragraph 1.2.1(c).

2.1.22 **"Reports"** has the meaning set out in paragraph 4.1.1.

2.1.23 **"Request for Additional Information"** has the meaning set out in paragraph 10.2.1.

2.1.24 **"Security Documents"** has the meaning set out in paragraph 9.3.1.

2.1.25 **"Submission Deadline"** is the date and time identified as such in paragraph 1.2.1(e).

2.1.26 **"Supplementary Conditions"** means the Supplementary Conditions for the CCDC 2 – 2008 stipulated price contract included on the Portal.

2.1.27 **"Work"** means the total construction and related services described in the Bid Documents.

# 3. BID DOCUMENTS

## 3.1 ACCESS TO THE BID DOCUMENTS

3.1.1 The Bid Documents will be made available to Bidders through the online digital bidding system established for this Bid Process on the website hosted by eSolutions Group Limited at "www.bidsandtenders.ca" (the "**Portal**"). The Portal will include all Bid Documents as well as Reports and other relevant notices, information and communications.

3.1.2 Each Bidder is solely responsible to ensure that it:

(a) registers with and obtains access to the Portal; and

(b) has the appropriate software to access, input, download and upload contents from and to the Portal; and

(c) visits and reviews the Portal as frequently as is necessary to ensure that it has the most current information, documents and addenda.

Bidders are solely responsible for visiting and checking the Portal for new content and the Owner accepts no responsibility for any Bidder lacking any documents or information posted to the Portal.

3.1.3 If there is a conflict or inconsistency between an electronic version of any document included or posted to the Portal and any other version of the same document, whether in electronic or paper form, the electronic version on the Portal shall govern.

### 3.2 THE BID DOCUMENTS

3.2.1 Bidders should ensure they have and/or have access to all of the documents listed below (collectively the "**Bid Documents**"). A Bid will be deemed to have been prepared on the basis of all Bid Documents issued and posted to the Portal prior to the Submission Deadline, and the Owner accepts no responsibility for any Bidder lacking or not being able to access any part of the Bid Documents.

(a) Instructions to Bidders (this document).

(b) Supplementary Conditions.

(c) Specifications.

(d) Drawings.

(e) Addenda, if any.

3.2.2 Bidders should inform the Bid Coordinator immediately if any documents are missing or incomplete and/or upon finding any discrepancies or omissions in the Bid Documents.

3.2.3 The Bid Documents are made available only for the purpose of submitting Bids for the Work. Availability and/or use of the Bid Documents does not confer a license or grant for any other purpose.

## 4. BIDDERS' DUE DILIGENCE

4.1.1 In addition to the Bid Documents, the Portal may include the Owner's information, data and environmental, geotechnical or other reports prepared or obtained with respect to the Place of the Work (collectively the **"Reports"**). The Reports should not be considered a representation of the conditions of the entire Place of the Work and are provided for general information and guidance purposes only. The Owner does not guarantee the accuracy or completeness of the Reports nor assumes any responsibility for any interpretations or conclusions that Bidders may make or draw from the Reports.

4.1.2 Nothing in this Bid Process or in the Bid Documents or in the Reports is intended to relieve Bidders from undertaking their own research, investigations or other due diligence, or forming their own opinions and conclusions with respect to the Work, the Place of the Work, the Bid Documents, the Contract, and all other matters related to this Bid Process. The Owner (a) does not accept or assume any responsibility for any interpretations or conclusions that Bidders may make or draw from the Bid Documents or the Reports, (b) does not represent, warrant or guarantee that the Bid Documents or the Reports are complete, accurate or comprehensive or exhaustive, and (c) assumes no responsibility for the completeness or accuracy of the Bid Documents or the Reports, or anything else provided or made available by the Owner during this Bid Process.

4.1.3 No allowances will be made for additional costs and no claims will be entertained in connection with:

(a) conditions which could reasonably have been ascertained by the Bidders through investigation or other due diligence undertaken prior to the Submission Deadline; and/or

(b) Work which is required and which is reasonably inferable from the Bid Documents and/or the Reports as being necessary.

# 5. COMMUNICATIONS, QUESTIONS AND ADDENDA

## 5.1 COMMUNICATIONS

5.1.1 Except as may be permitted in the Bid Documents, Bidders are not to communicate with or otherwise contact the Owner regarding this Bid Process at any time before execution of the Contract, if any. A Bidder's failure to comply with this paragraph may result in the disqualification of the Bidder and the rejection of its Bid.

5.1.2 Except where provided otherwise in these Instructions to Bidders, all communications (including questions) with the Owner permitted by this Bid Process are to be in writing and are to be submitted online through the Portal

## 5.2 BIDDERS' QUESTIONS

5.2.1 Bidders are encouraged to ask questions or request clarification with respect to any part of this Bid Process or any Bid Documents which do not appear to be clear. Questions received by the Question Deadline will be reviewed and if the Owner believes that a response is warranted, it will include the question and its answer in an addendum. Questions received after the Question Deadline may not be considered and may not be answered, although the Owner reserves the discretion, but has no obligation, to consider and respond to questions received after the Question Deadline. In responding to questions the Owner may answer similar questions from different Bidders only once, may edit or rephrase the questions, and may ignore questions which, in the Owner's opinion, do not require a response. All questions must be submitted through the Portal.

## 5.3 ADDENDA

5.3.1 This Bid Process and the Bid Documents may be amended only by written addendum posted to the Portal. Answers, responses, clarifications, instructions or any other information provided by any other means, by any person, in whatever context or setting, will not in any way bind the Owner or amend this Bid Process or any Bid Documents, and are not to be relied upon by any Bidder, unless and until they are posted to the Portal in the form of an addendum.

5.3.2 Addenda will be posted on the Portal only and will not be sent or otherwise distributed to the Bidders. Bidders are solely responsible:

(a) to visit and review the Portal for addenda, and the Owner shall not be responsible if any addenda are not obtained by a Bidder;

(b) to ensure they have received and that their Bid incorporates all addenda issued and posted to the Portal before the Submission Deadline and takes into account all resulting costs.

Bidders will be required to confirm their Bid incorporates all addenda by so indicating in their Bid.

# 6. MANDATORY SITE MEETING

## 6.1 MANDATORY ATTENDANCE

6.1.1 The Owner has scheduled a mandatory site meeting at the location, date and time specified in paragraph 1.2.1(a). The purpose of the meeting is to review the Bid Process and to provide those in attendance an opportunity to ask questions and tour the Place of the Work.

6.1.2 Attendance at the site meeting is mandatory:

(a) for Bidders;

(b) reserved.

All persons attending the site meeting will be required to sign an attendance log to confirm their attendance.

## 6.2 CONSEQUENCES OF FAILING TO ATTEND THE MANDATORY SITE MEETING

6.2.1 Bids received from Bidders who fail to attend the mandatory site meeting, as determined from the attendance log, will not be considered.

6.2.2 Where the Owner has required that prequalified Subcontractors attend the mandatory site meeting, as indicated in paragraph 6.1.2(b), then, Bids that fail to carry a prequalified Subcontractor that attended the mandatory site meeting, as determined from the attendance log, will not be considered.

## 6.3 INFORMATION OBTAINED AT THE MANDATORY SITE MEETING

6.3.1 Each Bidder acknowledges and agrees that:

(a) notwithstanding the Owner may give answers and may provide information during the site meeting, such answers and information, whether in verbal or in written form, will not in any way bind the Owner or amend this Bid Process or any Bid Documents, and are not to be relied upon in any way by a Bidder, except and only to the extent expressly confirmed in an addendum;

(b) anything said, written or done by the Owner or any other person, and any views or comments expressed in response to anything said or done during the site meeting, will not in any way bind the Owner or amend this Bid Process or any Bid Documents, and are not to be relied upon in any way by a Bidder except and only to the extent expressly confirmed in an addendum.

# 7. SITE INVESTIGATION BY BIDDERS

7.1.1 Each Bidder is solely responsible, at its own cost and expense, to carry out its own independent research and due diligence and to perform any investigations considered necessary by the Bidder to satisfy itself as to the existence and/or locations of utilities and underground services and all other existing conditions, circumstances and limitations affecting the Place of the Work, the Work, the Bid Documents, the Contract, and all other matters related to this Bid Process. The Bidders' obligations set out in this paragraph apply irrespective of the information contained in the Bid Documents or the Reports or that is made available to the Bidders during this Bid Process.

7.1.2 Bidders shall not undertake any investigation activities at the Place of the Work except as provided in this Article 7.

7.1.3 Bidders who would like an opportunity to undertake an investigation of the Place of the Work must submit an e-mail request to the Bid Coordinator. Such request must be received at least 2 business days before the Bidder's proposed date for the proposed investigation, provided that all investigations must be completed by the Question Deadline. The request must include:

(a) the proposed date and time and alternate date and time for the proposed investigation;

(b) the anticipated duration of the proposed investigation;

(c) names, titles and contact information of who will be attending;

(d) details of the proposed investigation, including who is proposed to carry out the investigation;

(e) area(s) of the Place of the Work for which access is requested;

(f) such other information as the Owner may reasonably require.

A Bidder's request will not be complete and an appointment for the investigation will not be scheduled until all of the required information has been provided.

7.1.4 If the Owner approves a Bidder's request to investigate the Place of the Work, the Owner will issue a written notification of the date and time on which the Bidder may attend at the Place of the Work, as well as the investigation activity(ies) which the Bidder is authorized to undertake, and the duration of such activity(ies). A representative of the Owner may attend to monitor the Bidder's activities.

7.1.5 Bidders acknowledge that unforeseen circumstances may arise and the Owner may, in its sole discretion, cancel, reschedule and/or modify the Bidder's visit and/or investigation activities on short notice or no notice to the Bidder.

7.1.6 Each Bidder acknowledges and agrees:

(a) that anything said, written or done by the Owner or its representatives, and any views or comments expressed in response to anything said or done during the investigation of the Place of the Work will not in any way bind the Owner or amend this Bid Process or any Bid Documents, and are not to be relied upon by any Bidder;

(b) to waive any and all right to contest, claim, complain, protest and/or dispute this Bid Process based on the fact that findings, information, results or data may have been obtained by another Bidder as a result of that Bidder's investigation of the Place of the Work, that were not obtained by, shared with, or provided to other Bidders.

7.1.7 Bidders shall, for their own forces and for their agents, consultants, contractors, subcontractors and all others attending at the Place of the Work with them or on their behalf:

(a) assume overall responsibility for compliance with all aspects of the applicable workers' compensation and health and construction safety legislation and all related rules, regulations and practices, and shall ensure that appropriate occupational health and safety instruction and training are provided to all those attending the Place of the Work;

(b) perform only investigations authorized by the Owner;

(c) avoid disturbing and take all reasonable steps necessary to promote and maintain the safety of the occupants of the Place of the Work and any adjacent properties and the public in general;

(d) respect and comply with local regulations and the Owner's requirements regarding permitted work hours and noise levels;

(e) indemnify and save the Owner harmless from, and be responsible for, all claims, demands, losses, costs or damages related to or arising from any activities performed by the Bidder or anyone attending with or on behalf of the Bidder at the Place of the Work, whether or not authorized by the Bidder or the Owner.

# 8. DESIGNATED SUBSTANCES

8.1 Without limiting the obligations of the bidders set out in Article 5, where the Place of the Work is within or part of an existing building, bidders should note they may encounter designated substances such as lead, mercury, silica, asbestos-containing material ("ACM"), benzene, arsenic, etc. If applicable, a list of designated substances present at the Place of the Work has been provided to all bidders and, if ACM is included in the list of designated substances, a report has also been provided indicating the condition and location of any ACM that may be present at the Place of the Work (collectively the "OHSA Reports").

8.2 In carrying out the Work under the Contract, bidders shall ensure they do not handle, deal with, disturb or remove any designated substance whether identified in the OHSA Reports or not, unless included in the Work required by the Bid Documents. Should a bidder determine, prior to the Closing Date, that the Work cannot be completed without handling, dealing with, disturbing or removing any designated substance identified in the OHSA Reports (and the Work does not otherwise require the bidder to handle, deal with, disturb and/or remove such substance), it shall immediately notify the Owner and the Consultant in writing so that, if necessary, instructions and/or clarifications may be issued in the form of an addendum.

8.3 All information provided to or obtained by bidders in connection with this bid process, including all Reports, Data and the OHSA Reports, are and shall remain the property of the Owner and must be treated as confidential whether or not a contract is awarded, and which confidentiality obligations shall survive termination of the bid process. Such information is not to be used for any purpose other than submitting a Bid.

# 9. INSTRUCTIONS FOR BID COMPLETION

## 9.1 BID COMPLETION

9.1.1 Bids which are completed and/or submitted by any means other than as set out in this Article 9 will not be considered.

9.1.2 Bidders shall:

(a) provide, input, post and/or upload all requested information and shall fill in all spaces and blanks on the Portal, as provided in Section 9.2; and

(b) submit the Security Documents described in Section 9.3 in accordance with and as provided in Section 9.4.

9.1.3 Bidders shall ensure all required information and documents are submitted through and uploaded / posted to the Portal BEFORE the Submission Deadline. Bidders who fail to do so before the Submission Deadline will be unable to submit their Bid.

## 9.2 INSTRUCTIONS

9.2.1 Bid Price. Bidders shall input in the space provided on the Portal the fixed, all-inclusive lump sum price for the Work (the "**Bid Price**"). The Bid Price shall exclude the Harmonized Sales Tax (HST) but shall include all other applicable taxes and duties.

9.2.2 Listing Subcontractors.

(a) If required, Bidders shall input a list of the Subcontractors proposed to perform or supply an item of the Work identified on the Portal. Failure to do so may result in the Bid being declared non-compliant.

(b) Where the Owner has prequalified one or more Subcontractors to perform or supply an identified item of the Work, Bidders shall select only a prequalified Subcontractor to perform or supply that item of Work. Failure to do so may result in the Bid being declared non-compliant.

(c) Where the Owner has required that prequalified Subcontractors attend the mandatory site meeting, as indicated in paragraph 6.1.2(b), Bidders shall select and carry only a prequalified Subcontractor that attended the mandatory site meeting, as determined from the attendance log. Failure to do so will result in the Bid being declared non-compliant.

(d) Where a Bidder lists "own forces" in place of a Subcontractor, the Bidder shall perform such item of the Work with its own forces. In such case the Owner reserves the right to obtain information from the Bidder and from third parties respecting the qualifications and experience of the Bidder's own forces for such item of the Work. If the Owner determines, acting reasonably, that the Bidder's own forces are not qualified or experienced to perform such item of the Work, the Owner may declare the Bid non-compliant.

9.2.3 Unit, Separate, Itemized and Alternative Prices. If required, Bidders shall submit the following prices, all of which shall exclude the Harmonized Sales Tax (HST) but shall include all other applicable taxes and duties:

(a) unit prices;

(b) separate prices for work, if any, which is not included in the Bid Price and which the Owner may add for the amount(s) indicated;

(c) itemized prices for Work, if any, which is included in the Bid Price and which the Owner may delete for the amount(s) indicated;

(d) alternative prices for work, if any, which is not included in the Bid Price and which the Owner may substitute for Work which is included in the Bid Price for the amount(s) indicated.

The Owner reserves the right to accept or reject any or all unit, separate, itemized and alternative prices submitted, and such prices shall remain in effect for the duration of the Contract.

## 9.3 SECURITY DOCUMENTS

9.3.1 Each Bidder shall submit the form of bid security specified or permitted in paragraph 1.2.1(g), as further described in paragraph 9.3.2. Where applicable, Bidders shall also submit the agreement

to bond / surety's consent specified in paragraph 9.3.3 (the bid security and, where applicable, the agreement to bond / surety's consent are collectively referred to as the "**Security Documents**").

9.3.2 Bid Security.

The bid security specified in paragraph 1.2.1(g) is a digital bid bond, the digital bid bond shall be in the amount of 10% of the Bid Price in the form CCDC 220 – 2002 naming "Simcoe County District School Board" as obligee and issued by a surety licensed to conduct surety and insurance business in Canada. The bid bond shall remain valid for at least the duration of the Irrevocability Period. No other form of bid bond is acceptable.

The bid security of the successful Bidder will be retained by the Owner as compensation towards the damages the Owner will suffer should the successful Bidder fail to sign the Contract and/or fail to provide the specified performance security and/or otherwise breach the Bid Contract.

9.3.3 Agreement to Bond / Surety's Consent. Each Bidder that submits bid security in the form of a digital bid bond shall also submit an agreement to bond or surety's consent issued by the same surety that provides the digital bid bond, undertaking to provide a performance bond and a labour and material payment bond, each in the amount of fifty percent (50%) of the Bid Price. The agreement to bond / surety's consent shall remain valid for at least the duration of the Irrevocability Period.

9.3.4 Bidders shall include the costs of all Security Documents in their Bid Price.

### 9.4 DELIVERY OF THE SECURITY DOCUMENTS

9.4.1 Each Bidder that intends to submit bid security in the form of a digital bid bond shall:

(a) upload or post the digital bond described in paragraph 9.3.2 to the Portal; and

(b) upload or post to the Portal a scanned copy (in "pdf" format) of the agreement to bond or surety's consent described in paragraph 9.3.3.

9.4.2 Reserved.

9.4.3 Bids that do not comply with this Section 9.4 will be declared non-compliant.

### 9.5 BID IRREVOCABILITY

9.5.1 Each Bid shall be irrevocable and shall remain open for consideration by the Owner for the duration of the Irrevocability Period.

## 10. EVALUATING BIDS

### 10.1 GENERAL

10.1.1 Bids will be reviewed and evaluated by the Owner in private.

10.1.2 Notwithstanding anything else contained in the Bid Documents, the award of the Contract, if any, shall be subject to the approval of the Board, in its sole and unfettered discretion. Bidders shall have no claims whatsoever against the Owner or the Board arising out of the exercise of authority by the Board, and/or in the event the Owner, in its sole and unfettered discretion, and for any or no reason, decides not to award the Contract.

## 10.2 REQUESTS FOR ADDITIONAL INFORMATION

10.2.1 The Bid Coordinator, on behalf of the Owner, may contact any one or more Bidders to request clarification of any information or documents submitted as part of a Bid, or to request supplementary information (collectively, "**Request for Additional Information**"), without any obligation to make the same or any Request for Additional Information of any other Bidder. Notwithstanding the preceding sentence, the Owner has no obligation to make any Request for Additional Information.

10.2.2 Bidders shall respond to all Requests for Additional Information within the time and in the manner stipulated in each Request for Additional Information, and any response received will form an integral part of a Bidder's Bid. If a Bidder fails to respond to a Request for Additional Information, its Bid will be considered and evaluated based solely on the original Bid contents submitted.

10.2.3 A Bidder's response to a Request for Additional Information shall not be an opportunity for the Bidder to either correct errors or to change its Bid in any substantive manner. Subject to that, information, prices, rates and documents submitted in response to a Request for Additional Information shall form part of a Bidder's Bid.

## 10.3 MANDATORY REQUIREMENTS

10.3.1 Subject to paragraph 10.3.2, only Bids which are submitted through the Portal before the Submission Deadline and which meet all of the mandatory requirements listed below (collectively, the **"Mandatory Requirements"**) on a "pass/fail" basis will be eligible for evaluation and award of the Contract:

(a) the Bidder is a Prequalified Contractor; and

(b) the Bidder attended the mandatory site meeting, as determined from the attendance log; and

(c) where the Owner has required that prequalified Subcontractors attend the mandatory site meeting, as indicated in paragraph 6.1.2(b), the Bid includes prequalified Subcontractor(s) that attended the mandatory site meeting, as determined from the attendance log;

(d) the Bid includes the specified Security Documents and complies with Section 9.4; and

(e) the Bid substantially complies with the requirements of the Bid Documents. In this respect, the Owner reserves the right, in its sole and unfettered discretion, to waive minor errors and matters of non-compliance contained in a Bid.

10.3.2 If all Bids fail at least one of the Mandatory Requirements the Owner, in its sole discretion, may:

(a) evaluate one or more Bids and proceed with the Bid Process and treat such Bid(s) as having met all of the Mandatory Requirements; and/or

(b) negotiate a Contract for the whole or any part of the Work with any Bidder; and/or

(c) take any action in accordance with paragraph 12.2.1.

## 10.4 EVALUATION

10.4.1 Only Bids which pass all of the Mandatory Criteria or that are selected in accordance with paragraph 10.3.2(a) will be evaluated.

10.4.2 Reserved

10.4.3 It is the intent of the Simcoe County District School Board that a compliant bid submitted by a Bidder with the lowest base bid price be awarded the contract.

10.4.4 If there is a tie in the evaluation of two or more Bids, the tie will be broken by a coin toss or by the drawing of lots performed by the Owner in the presence (in person or virtually) of the tied Bidders.

# 11. AWARD OF THE CONTRACT, DOCUMENTS TO BE DELIVERED, AND SIGNING THE CONTRACT

## 11.1 AWARD OF THE CONTRACT

11.1.1 Subject to receiving the approval of the Board, and subject to the other provisions of the Bid Documents, if the Owner decides to award the Contract it will issue an award letter to the Bidder that submitted the Bid which received the highest Evaluation Score.

## 11.2 DOCUMENTS TO BE DELIVERED

11.2.1 Within 10 business days of receiving an award letter from the Owner the successful Bidder shall deliver to the Owner:

(a) where the Bidder submitted an agreement to bond / surety's consent, the Bidder shall deliver the performance bond and the labour and material payment bond described in the Bid Documents, the forms of such bonds to comply with the requirements of the Contract;

(b) certified true copies of the insurance policies required by the Contract or certificates of insurance, at the option of the Owner;

(c) the Bidder's current WSIB clearance certificate;

(d) the Bidder's health and safety policy for the Work; and

(e) a copy of the notice of project issued by the Ministry of Labour naming the Bidder as the "constructor" for the Work.

11.2.2 A Bidder's failure to comply with paragraph 11.2.1 will constitute a breach of the Bid Contract.

## 11.3 SIGNING THE CONTRACT

11.3.1 The successful Bidder shall sign the Contract and shall deliver the signed original to the Owner within 10 business days of the Bidder's receipt of the execution copy of the Contract. A Bidder's failure to comply with this paragraph will constitute a breach of the Bid Contract.

# 12. OWNER'S RIGHTS

## 12.1 GENERAL

12.1.1 In addition to any other express rights contained in the Bid Documents or any other rights which may be implied in the circumstances, the Owner reserves the right to exercise any or all or a combination of the rights described in this Article. The Owner shall not be liable for any costs, expenses or damages incurred or claimed by a Bidder resulting from the Owner's exercise of any of its rights.

12.1.2 A Bidder's submission or the Owner's evaluation of any Bid, even where only one Bid is submitted before the Submission Deadline and even where only one Bid meets all Mandatory Requirements, will not obligate the Owner to accept any Bid, award the Contract, or proceed further with this Bid Process.

### 12.2 THE OWNER'S RIGHTS

12.2.1 The Owner may, in its sole discretion, and for any or no reason:

(a) reject any or one or more or all Bids, even if only one Bid is received;

(b) reject the whole or any part of any Bid;

(c) accept the whole or any part of a Bid;

(d) if only one Bid meets all of the Mandatory Requirements, elect to accept or reject all or any part of it;

(e) cancel this Bid Process at any time before the award of the Contract;

(f) cancel this Bid Process at any time before the award of the Contract and issue a new procurement process for work which is same or similar to the Work, with the same or different participants.

12.2.2 The Board reserves the right to disqualify a Bidder and reject a Tender on the basis of: (I) past performance on previous Contracts awarded by the Simcoe County District School Board; (II) other relevant information that arises during this RFT Process, or (III) information provided by references.

12.2.3 The Owner reserves the right to:

(a) waive minor errors and matters of non-compliance contained in a Bid;

(b) adjust an Evaluation Score or reject a Bid on the basis of information received in response to a Request for Additional Information;

(c) disqualify any Bidder whose Bid contains misrepresentations or any other inaccurate or misleading information relating to matters which the Owner, in its sole discretion, considers material;

(d) Reserved.

## 13. GENERAL

### 13.1 PROHIBITION ON LOBBYING AND COLLUSION

13.1.1 Bidders and their directors, officers, employees, consultants, agents, advisors and other representatives are strictly prohibited from engaging in conduct which is or could reasonably be considered as any form of political or other lobbying, or as an attempt to influence the outcome of this Bid Process. Without limiting the generality of the foregoing, and except as provided in the Bid Documents, no such person shall contact, communicate with or attempt to contact or communicate with, directly or indirectly and in any manner whatsoever, any staff, personnel or representative of the Owner or the Board in connection with this Bid Process, including for the purpose of:

(a) commenting on, or attempting to influence the views on, the merits of the Bidder's Bid, or in relation to the Bids of other Bidders;

(b) influencing or attempting to influence the evaluation of the Bids;

(c) promoting the Bidder or its interests, including in preference to that of other Bidders;

(d) commenting on or criticizing aspects of this Bid Process, the Bid Documents, the Work, or the Contract, including in a manner which may give the Bidder a competitive or other advantage over other Bidders;

(e) criticizing other Bidders or the Bids of other Bidders.

13.1.2 Bidders and their directors, officers, employees, consultants, agents, advisors and other representatives are prohibited from communicating with or attempting to contact or communicate with, directly or indirectly and in any manner whatsoever, any information whatsoever regarding the preparation of a Bid to any other Bidder.

13.1.3 Failure of a Bidder to comply with this Section may result in the disqualification of the Bidder and the rejection of its Bid.

## 13.2 CONFLICT OF INTEREST

13.2.1 Bidders shall disclose all perceived, potential and actual Conflicts of Interest. For the purposes of this Bid Process, "**Conflict of Interest**" includes:

(a) any situation or circumstances where, in relation to this Bid Process, the Work, and/or the Contract, the Bidder's other commitments, relationships or financial interests could or could be perceived to exert an improper influence over the objective, unbiased and impartial exercise of independent judgment by any member or representative of the Owner or the Board;

(b) any situation or circumstances where any person employed by the Owner in any capacity:

(i) has a direct or indirect financial or other interest in any Bidder;

(ii) is an employee or a consultant to or under contract to any Bidder;

(iii) is negotiating or has an arrangement concerning future employment or contracting with any Bidder;

(iv) has an ownership interest in or is an officer or director or partner of any Bidder.

13.2.2 If a Bidder discovers, before or after the Submission Deadline, any perceived, potential or actual Conflict of Interest, the Bidder shall immediately send a written statement to the Bid Coordinator describing the perceived, potential or actual Conflict of Interest, along with a written proposal that, if implemented, would address the identified perceived, potential or actual Conflict of Interest. The Owner will review the Bidder's written statement and proposal and, without limiting the generality of Article 12, the Owner may, in its sole discretion:

(a) disqualify the Bidder from participating in this Bid Process and reject its Bid;

(b) waive any and all perceived, potential or actual Conflict of Interest upon such terms and conditions as the Owner, in its sole discretion, requires to satisfy itself that the Conflict of Interest has been appropriately managed, mitigated and minimized.

13.2.3 Failure of a Bidder to comply with this Section may result in the disqualification of the Bidder and the rejection of its Bid.

## 13.3 CONFIDENTIALITY, DISCLOSURE AND MFIPPA

13.3.1 All information provided by or obtained from the Owner in connection with this Bid Process, the Work, and/or the Contract, including all Reports, is and shall remain the property of the Owner and must be treated as confidential, and such confidentiality obligations shall survive the Bid Process. Such information is not to be used for any purpose other than responding to this Bid Process and, upon conclusion of this Bid Process, if requested by the Owner, Bidders shall return all such information.

13.3.2 Bidders acknowledge that the contents of their Bids will be disclosed within the Owner's organization and/or to the Owner's consultants and advisors. The Owner will use reasonable efforts to protect sensitive and confidential information provided by the Bidders, however, the Owner shall not be liable in any way whatsoever if such information, or any part of it, is disclosed, even if the Owner, its consultants, advisors, staff or any other person associated with them may have been negligent with respect to such disclosure. By submitting a Bid each Bidder agrees to such disclosure and releases the Bid Coordinator and the Owner from any liability for the same.

13.3.3 The Owner may be required to disclose parts or all of a Bid pursuant to the provisions of MFIPPA or other legislation. Subject to the provisions of such legislation, the Owner will use reasonable efforts to safeguard the confidentiality of any information identified by a Bidder as confidential, however, the Owner shall not be liable in any way whatsoever if such information is disclosed based on an order or decision made under such legislation or any other applicable law. By submitting a Bid each Bidder agrees to such disclosure and releases the Bid Coordinator and the Owner from any liability for the same.

## 13.4 DEBRIEFING

13.4.1 Following the conclusion of this Bid Process, and provided the Contract has been signed, the Owner will offer separate debriefings to unsuccessful Bidders, but only if requested in accordance with paragraph 13.4.2. Debriefings will be held in person or by telephone conference call, at the Owner's discretion, and will be scheduled on a date and time and for a duration to be confirmed by the Owner.

13.4.2 If an unsuccessful Bidder desires a debriefing it shall submit a written e-mail request to the Bid Coordinator within sixty (60) days after the expiry of the Irrevocability Period, failing which no debriefing will be provided.

13.4.3 Evaluations and scoring of Bids are confidential and during a debriefing the Owner will not provide critiques or discuss the scores or the merits of any Bid other than the Bid submitted by the Bidder that requested the debriefing.

## 13.5 PUBLIC STATEMENTS

13.5.1 Bidders shall not publish, issue, advertise, distribute or make any statements, postings, blogs or releases, electronic or otherwise, concerning their or any other Bid, the Bid Process, the Contract, the evaluation of Bids, or the award of the Contract, without the Owner's prior express written consent. A Bidder's failure to comply with this paragraph may result in the disqualification of the Bidder and the rejection of its Bid.

## 13.6 AWARD DOES NOT CONSTITUTE ENDORSEMENT

13.6.1 The Owner's award of the Contract, if any, does not constitute a general endorsement of the successful Bidder's work or services.

## 13.7 LIMIT OF LIABILITY

13.7.1 Each Bidder agrees that the liability of the Owner to any Bidder and the aggregate amount of damages recoverable against the Owner for any and all claims relating to or arising from this Bid Process including:

(a) claims arising from negligence, wilful misconduct or other conduct; and/or

(b) claims arising from a breach of the Bid Contract or any other contractual or other relationship or obligation that may arise as a result of a Bidder's participation in this Bid Process and/or submission of a Bid,

shall be limited to the Bidder's reasonable demonstrated costs of preparing its Bid.

## 13.8 DISPUTES

13.8.1 If a dispute arises in connection with this Bid Process including, without limitation, a dispute concerning the existence of the Bid Contract or a breach of the Bid Contract, or a dispute as to whether a Bid meets the Mandatory Requirements, the parties to the dispute agree:

(a) to use their best efforts to resolve the dispute through amicable and good faith negotiations for a period of at least fifteen (15) days, having such written and oral communications and meetings as appropriate;

(b) if the dispute is not resolved through negotiations the Owner, in its unqualified subjective discretion, may refer the dispute to confidential final binding arbitration before a single arbitrator, selected by the Owner, to be held at Barrie, Ontario pursuant to the *Arbitration Act, 1991* (Ontario), as amended. If the Owner refers the dispute to arbitration, each Bidder agrees that it is bound to arbitrate such dispute. Unless the Owner refers such dispute to arbitration, there shall be no arbitration of such dispute.

13.8.2 The Owner may give notice of a dispute to one or more Bidders, each of whom shall be a party to and shall be entitled to participate in the negotiation and/or arbitration, as the case may be and, in the case of arbitration, each of whom shall be bound by the arbitrator's award, whether or not they participated in the arbitration.

13.8.3 If the Owner refers a dispute to arbitration, the parties to the arbitration shall exchange brief statements of their respective positions on the dispute, together with the relevant documents, and submit to an arbitration hearing which shall last no longer than two (2) days, subject to the discretion of the arbitrator to increase such time. The parties to the arbitration further agree that the arbitrator's award shall be final and binding and shall not be subject to appeal. The costs of the arbitrator and the venue shall be shared equally among the parties to the arbitration.

**END OF DOCUMENT**

# SUPPLEMENTARY CONDITIONS
## AMENDMENTS TO CCDC 2 – 2008
## 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 – 2008.

Where any article or paragraph in the CCDC 2 – 2008 document is supplemented by one of the following, the provisions of such article or paragraph shall remain in effect and the supplemental provisions shall be considered as added thereto. Where any article or paragraph in the CCDC 2 – 2008 document is amended, deleted, or superseded by any of the following, the provisions of such article or paragraph not so amended, deleted or superseded shall remain in effect.

The CCDC 2 – 2008 document is amended as follows:

## SC1. AGREEMENT BETWEEN OWNER AND CONTRACTOR

### SC1.1 ARTICLE A-5 PAYMENT

1.1.1 Amend paragraph 5.3.1 as follows:

(a) Delete “2%” and replace it with “0%” in paragraph 5.3.1(1); and

(b) Delete “4%” and replace it with “2%” in paragraph 5.3.1(2).

### SC1.2 ARTICLE A-6 RECEIPT OF AND ADDRESSES FOR NOTICES IN WRITING

1.2.1 Amend paragraph 6.1 by deleting the words “or other form of electronic communication” in the second and seventh lines.

### SC1.3 ARTICLE A-9 TIME IS OF THE ESSENCE

1.3.1 Add a new Article A-9 as follows:

“**ARTICLE A-9 TIME IS OF THE ESSENCE**

9.1 The Contractor represents and warrants that it will attain Substantial Performance of the Work by the date stipulated in paragraph 1.3 of Article A-1 – THE WORK and acknowledges that it has been advised by the Owner that it is critical to the Owner that Substantial Performance of the Work is attained by such date. The Contractor agrees that time shall be of the essence in the performance of the Contractor’s obligations under this Contract.”

## SC2. DEFINITIONS

### SC2.1 Definitions

2.1.1 Amend Definition 4, “Consultant”, by adding the following to the end of that definition:

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

2.1.2 Amend Definition 6, “Contract Documents”, by adding the words “in writing” after the word “upon” in the second line.

2.1.3 Amend Definition 12, “Owner”, by adding the following to the end of that Definition:

“For purposes of the Contract, the terms “Owner”, “SCDSB” and the “Board” shall be considered synonymous.”

2.1.4 Amend Definition 16, “Provide”, by adding the following to the end of that Definition:

“Provide has this meaning whether or not the first letter is capitalized.”

2.1.5 Add the following new Definitions:

"**27. Act**

Act means the Construction Act (Ontario), as amended.

**28. As-Built Drawings**

As-Built Drawings means drawings prepared by the Contractor by marking on a copy of the Drawings the 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, as well as in paper copy and PDF formats.

**29. Construction Schedule**

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

**30. Environmental Programs**

Environmental Programs means the environmental plans, programs, procedures and requirements of the Owner. The Environmental Programs include Owner's asbestos control program, its mould program and a program for controlling and handling designated substances**.**

**31. Install**

Install means install and connect. Install has this meaning whether or not the first letter is capitalized**.**

**32. Labour Dispute**

Labour Dispute means any lawful or unlawful labour problems, work stoppage, labour disruption, strike, lock-outs (including lock-outs decreed or recommended for its members by a recognized contractor's association of which the Contractor is a member or to which the Contractor is otherwise bound), job action, slow down, picketing, refusal to work or continue to work, refusal to supply materials, cessation or work or other labour controversy which does, or might, affect the Work.

**33. OHSA**

OHSA means the Occupational Health and Safety Act (Ontario), as amended, and all rules and regulations made thereunder.

**34. Proper Invoice**

Proper Invoice means an application for payment delivered by the Contractor to the Owner that fully complies with the requirements of GC 5.1A – PROPER INVOICE FOR PROGRESS PAYMENT and GC 5.6A – PROPER INVOICE FOR FINAL PAYMENT, as the case may be.

**35. WSIB**

WSIB means the Ontario Workplace Safety & Insurance Board."

# SC3. GENERAL CONDITIONS OF THE STIPULATED PRICE CONTRACT

## SC3.1 GC 1.1 CONTRACT DOCUMENTS

3.1.1 Amend paragraph 1.1.1 by adding the following to the end of that paragraph:

"If the Contractor finds discrepancies in, or omissions from, or has any doubt about the meaning or intent of any of the Contract Documents, the Contractor shall at once notify the Consultant."

3.1.2 Amend paragraph 1.1.3 by adding the following to the end of that paragraph:

"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 in accordance with the Contract Documents. 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."

3.1.3 Amend paragraph 1.1.6 by adding new paragraphs 1.1.6.1 and 1.1.6.2 as follows:

"1.1.6.1 The Specifications shall be read as a whole and are the minimum construction requirements. Neither the organization nor the division of the Specifications nor anything else contained in the Contract Documents will be construed to place responsibility on the Consultant to settle disputes among the Subcontractors and Suppliers in respect to such organization or division.

1.1.6.2 The Drawings are, in part, diagrammatic and are intended to convey the scope of the Work and indicate elevations and 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 conditions of the pre-grade elevations and 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 satisfy itself and become familiar with conditions and spaces affecting these matters before proceeding with the Work. Where site conditions require reasonable minor changes in indicated locations and arrangements, the Contractor shall make such changes at no additional cost to the Owner. Similarly, where known conditions or existing conditions interfere with new installation and require relocation, the Contractor shall include such relocation in the Work. The Contractor shall arrange and install fixtures and equipment in such a way as to conserve as much headroom and space as possible."

3.1.4 Amend paragraph 1.1.7 as follows:

(a) amend paragraph 1.1.7.1 by changing the order of the first four bullet points so that, as reordered, the bullet points read as follows:

"1.1.7.1 the order of priority of documents, from highest to lowest, shall be

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

(b) add to the end of paragraph 1.1.7 the following:

"Notwithstanding the foregoing, if there is a conflict or discrepancy between Drawings or between Drawings and Specifications or any other Contract Documents in relation to the Products to be supplied or the amount of labour or materials required to complete a particular item of Work, the Contractor shall supply and shall include in the Work the Products, labour and materials which would provide the greatest benefit to the Owner, as determined by the Owner."

3.1.5 Delete paragraph 1.1.8 and replace it with the following:

"1.1.8 The Owner shall provide the Contractor, without charge, 6 copies of the Contract Documents. Additional copies of the Contract Documents may be obtained from the Consultant at a reasonable cost."

## SC3.2 GC 1.3 RIGHTS AND REMEDIES

3.2.1 Add a new paragraph 1.3.3 as follows:

"1.3.3 To be effective, a waiver of a right, remedy, duty or obligation under this Contract must be expressly written by an authorized representative of the party. 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 by the Owner;

.3 final acceptance of the Work by the Owner;

.4 failure of the Owner or its representatives to object to known defects;

.5 specifying a list of defects will not be held a waiver of defects not listed."

## SC3.3 GC 2.2 ROLE OF THE CONSULTANT

3.3.1 Amend paragraph 2.2.7 by deleting the words "Except with respect to GC 5.1 – FINANCING INFORMATION REQUIRED OF THE OWNER" from the beginning of the paragraph.

3.3.2 Amend paragraph 2.2.13 by adding the following to the end of that paragraph:

"If, in the opinion of the Contractor, a Supplemental Instruction involves an adjustment to the Contract Price or the Contract Time, the Contractor shall, within five (5) Working Days of receipt of the Supplemental Instruction, provide the Consultant with a written notice to that effect and shall await further instructions. The Contractor's failure to provide such written notification 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. Without limiting the generality of the foregoing, every item on the Drawings shall be deemed to be included within the scope of the Work, unless noted 'not in contract'."

3.3.1 Add a new paragraph 2.2.19 as follows:

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

## SC3.4 GC 2.3 REVIEW AND INSPECTION OF THE WORK

3.4.1 Amend paragraph 2.3.5 by adding the following to the end of the second sentence:

", and there shall be no extensions of the Contract Time resulting from any delay caused by such examination and correction."

## SC3.5 GC 2.4 DEFECTIVE WORK

3.5.1 Add new paragraphs 2.4.1.1 and 2.4.1.2 as follows:

"2.4.1.1 The Contractor shall rectify, in a manner acceptable to the Owner and the Consultant, all defective Work and deficiencies throughout the Work, whether or not they are specifically identified by the Owner or the Consultant.

2.4.1.2 The Contractor shall prioritize the correction of any defective Work or deficiencies identified as priorities by the Owner or the Consultant."

## SC3.6 GC 3.0 PRE-CONSTRUCTION SUBMITTALS

3.6.1 Add a new GC 3.0 as follows:

"**GC 3.0 PRE-CONSTRUCTION SUBMITTALS**

3.0.1 Prior to site mobilization, the Contractor shall submit to the Owner:

.1 a current WSIB clearance certificate;

.2 certified true copies of the Contractor's insurance policies having application to the Project or certificates of insurance, at the option of the Owner;

.3 the bonds described in GC 11.2 – CONTRACT SECURITY;

.4 documentation of the Contractor's in-house safety program to be implemented for the Project;

.5 a copy of the Notice of Project filed with the appropriate Ministry naming the Contractor as "constructor" under the OHSA; and

.6 the Construction Schedule referred to in paragraph 3.5.1.1 of GC 3.5 – CONSTRUCTION SCHEDULE."

## SC3.7 GC 3.1 CONTROL OF THE WORK

3.7.1 Add new paragraphs 3.1.3 to 3.1.6 as follows:

"3.1.3 Notwithstanding paragraphs 3.1.1 and 3.1.2, the Contractor agrees that it shall fully incorporate and comply with all policies and procedures of the Owner which are relevant to any activity to be performed under the Contract. The Contractor shall inquire from the Owner if such policies or procedures exist and the Owner agrees that it will use reasonable efforts to communicate to the Contractor all relevant policies or procedures.

3.1.4 Prior to commencing fabrication and construction activities, 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, the Contractor shall immediately notify the Consultant in writing and shall obtain written instructions from the Consultant before proceeding with any part of the affected Work.

3.1.5 The Contractor shall be entirely responsible for the proper laying out of the whole of the Work. The Contractor shall employ an experienced and licensed land surveyor to establish and check grades, benchmarks, references, elevations, points and lines as from time to time may be required for the purposes of the Work, or layout of same, and the Contractor shall at every appropriate stage of the Work take all proper steps to have all proper checks and surveys made so as to ensure that the Work and all components thereof will be wholly within the boundaries of the Project site and in the exact position (or respective positions) established for such Work, and shall assume full responsibility for the correctness of all such lines, levels and measurements.

3.1.6 The Contractor shall perform the Work in accordance with modern practice and shall employ only good workmanship in accordance with the Contract Documents, 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 the coordination of the various parts of the Work so that no part shall be left in an unfinished or incomplete condition owing to any disagreement between Subcontractors, or between any of the Subcontractors and the Contractor as to where the Work of one begins or ends with relation to the Work of the other."

## SC3.8 GC 3.2 CONSTRUCTION BY OWNER OR OTHER CONTRACTORS

3.8.1 Delete paragraphs 3.2.2.1 and 3.2.2.2.

3.8.2 Amend paragraph 3.2.3.2 by deleting the semi-colon towards the end of that paragraph and adding the following after the words "schedules and":

"co-ordinate and schedule the activities and work of other contractors and Owner's own forces with the Work of the Contractor and connect as specified or shown in the Contract Documents;"

3.8.3 Amend paragraph 3.2.3.3 by adding the following to the end of that paragraph:

"Failure by the Contractor to so report shall invalidate any claims against the Owner by reason of the deficiencies in the work of other contractors or Owner's own forces except those deficiencies not then reasonably discoverable."

3.8.4 Add a new paragraph 3.2.3.4 as follows:

"3.2.3.4 assume overall responsibility for compliance with all aspects of the applicable health and construction safety legislation at the Place of the Work, including all the responsibilities of the "constructor" under the OHSA."

3.8.5 Add a new paragraph 3.2.7 as follows:

"3.2.7 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 forthwith give Notice in Writing to the Owner as soon as reasonably possible 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."

## SC3.9 GC 3.4 DOCUMENT REVIEW

3.9.1 Amend paragraph 3.4.1 by deleting the second and third sentences of that paragraph and replacing them with the following:

"Such review by the Contractor shall meet the standard of care described in GC 3.14 – STANDARD OF CARE. Except for the obligation to make such review and report the result, the Contractor does not assume any responsibility to the Owner or the Consultant for the accuracy of the Contract Documents. Provided it has exercised the degree of care and skill described in this paragraph, 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."

3.9.2 Add new paragraphs 3.4.2 and 3.4.3 as follows:

"3.4.2 Notwithstanding the foregoing, errors, inconsistencies, discrepancies and/or omissions shall not include lack of reference on the Drawings or in the Specifications to labour and/or Products that are required or normally recognized within respective trade practices as being necessary for the complete execution of the Work.

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

## SC3.10 GC 3.5 CONSTRUCTION SCHEDULE

3.10.1 Delete paragraph 3.5.1 and replace it with the following:

"3.5.1 The Contractor shall:

.1 within ten (10) Working Days of signing this Contract submit to the Owner, for the Owner's approval, a Construction Schedule that indicates the timing of major activities and critical milestone dates for the Project, demonstrating that the Work will be performed in conformity with the Contract Time. Such schedule:

(A) shall be provided in editable electronic format approved by the Owner and shall include and show all logic links between activities; and

(B) shall be prepared in collaboration with, and supported by, the Subcontractors and Suppliers whose activities affect the critical path of the Work, and

(C) shall include and make provision for statutory holidays, the rectification of defects and deficiencies, and all warranty obligations, and

(D) 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 manpower and Construction Equipment, as are necessary to maintain progress under the Construction Schedule or any successor or revised schedule approved by the Owner; and

.3 monitor the progress of the Work relative to the Construction Schedule or any successor or revised schedule approved by the Owner and update the Construction Schedule on a monthly basis or at such other interval as instructed by the Owner and/or the Consultant; and

.4 advise the Consultant and the Owner in writing of any variation from the baseline or slippage in the Construction Schedule within 24 hours of such variation or slippage becoming apparent; and

.5 at each site meeting, provide (in writing or verbally to be recorded in minutes) to the Owner and the Consultant a two (2) week look-ahead schedule indicating the major activities to be undertaken or constructed in such two (2) week period."

3.10.2 Add new paragraphs 3.5.2, 3.5.3 and 3.5.4 as follows:

"3.5.2 If at any time it should appear to the Owner or the Consultant that the actual progress of the Work is behind the Construction Schedule or any other schedule or is likely to fall behind schedule, or if the Contractor has so advised the Consultant pursuant to paragraph 3.5.1.3, the Contractor shall take appropriate steps, at the Contractor's own expense, to cause the actual progress of the Work to conform to the Construction Schedule and shall produce and present to the Owner and the Consultant, for review and approval, a recovery plan demonstrating how the Contractor will achieve the recovery of the Construction Schedule.

3.5.3 If after applying the expertise and resources required under paragraphs 3.5.1.2 and 3.5.2 the Contractor forms the opinion that the slippage in the Construction Schedule or any other schedule cannot be recovered by the Contractor, it shall give Notice in Writing to the Consultant and the Owner if the Contractor intends to apply for an extension of Contract Time.

3.5.4 Without limiting the other obligations of the Contractor under GC 3.5, the Contractor shall not amend the Construction Schedule without the prior written consent of the Owner."

## SC3.11 GC 3.6 SUPERVISION

3.11.1 Amend paragraph 3.6.1 by adding the following to the end of that paragraph:

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

## SC3.12 GC 3.7 SUBCONTRACTORS AND SUPPLIERS

3.12.1 Add new paragraph 3.7.1.4 as follows:

"3.7.1.4 ensure that all Subcontractors and Suppliers, and anyone employed or engaged by them directly or indirectly, have the qualifications, technical skills, levels of experience and knowledge required (including with respect to all applicable health and construction safety rules and regulations), and all applicable permits, licenses and approvals necessary, to discharge the work to be performed by them in accordance with the terms of the Contract."

3.12.2 Amend paragraph 3.7.2 as follows:

(a) by deleting the words "before signing the Contract" in the third line of that paragraph; and

(b) by adding the following to the end of that paragraph:

"The Contractor agrees not to change Subcontractors without the prior written consent of the Owner, which consent will not be unreasonably withheld."

3.12.3 Amend paragraph 3.7.3 by deleting the words "before the Owner has signed the Contract" in the first line of that paragraph.

3.12.4 Add a new paragraph 3.7.7 as follows:

"3.7.7 Notwithstanding paragraph 3.7.5, the Owner may assign to the Contractor and the Contractor shall accept the assignment of any contract procured by the Owner for Work or Products required on the Project that has been pre-tendered or pre-negotiated by or on behalf of the Owner."

## SC3.13 GC 3.8 LABOUR AND PRODUCTS

3.13.1 Amend paragraph 3.8.1 by adding the following sentence to the end of that paragraph:

"The Contractor represents and warrants that the Products provided in accordance with the Contract Documents are not subject to any conditional sales contracts and are not subject to any security rights claimed or obtained by any third party which may subject any of the Products to seizure and/or removal from the Place of the Work."

3.13.2 Delete paragraph 3.8.2 and replace it with the following:

"3.8.2 Products provided shall be new and shall conform to all current applicable specifications of the Canadian Standards Association, Canadian Standards Board or General Standards Board, ASTM, National Building Code, Ontario Building Code and all governmental authorities having jurisdiction at the Place of the Work, unless otherwise specified. Products which are not specified shall be of a quality consistent with those specified and their use acceptable to the Consultant. Products brought on to the Place of the Work by the Contractor shall be deemed to be the property of the Owner, but the Owner shall be under no liability for loss thereof or damage thereto arising from any cause whatsoever, and such Products shall be brought to the Place of the Work at the sole risk of the Contractor"

3.13.3 Amend paragraph 3.8.3 by adding the words ", agents, Subcontractors and Suppliers" after the word "employees" toward the end of the first line.

3.13.4 Add new paragraphs 3.8.4 to 3.8.8 as follows:

"3.8.4 The Contractor is responsible for the safe on-site storage of Products and their protection (including Products supplied by the Owner and other contractors to be installed under the Contract) in such ways as to avoid dangerous conditions or contamination to the Products or other persons or property and in locations at the Place of the Work to the satisfaction of the Owner and the Consultant.

3.8.5 The Contractor shall cooperate with the Owner and shall take all reasonable and necessary actions to maintain stable and harmonious labour relations with respect to the Work, including cooperation to attempt to avoid work stoppages, trade union jurisdictional disputes, and other Labour Disputes. The Contractor shall not, and shall ensure that its Subcontractors and Suppliers do not, employ any persons on the Project whose labour affiliation, or lack thereof, is incompatible with other labour employed in connection with the Work. Any costs arising from Labour Disputes as a result of the employment of any such person by the Contractor, its Subcontractors or Suppliers, shall be the sole expense of the Contractor.

3.8.6 Without in any way limiting the Contractor's obligations under this Contract, the Contractor shall prepare and implement 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 Owner. Such job site rules shall be consistent with the Contractor's duties and obligations under the OHSA, and shall include provisions making smoking and the consumption of alcohol or non-prescription drugs on the Project the subject of discipline proceedings and/or termination of employment.

3.8.7 The Owner, 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 who, in the opinion of the Owner, is a detriment to the Project. Immediately upon receipt of the Owner's order, the Contractor shall make arrangements to appoint a replacement representative or employee acceptable to the Owner.

3.8.8 Where the Work is being performed at or near an existing school during the school year, the Contractor shall, upon the Owner's request, provide to the Owner clear criminal background checks for all of the Contractor's employees who will be providing work or services at the Place of the Work, and the Contractor shall require its Subcontractors and Suppliers to provide clear criminal background checks for any of their employees who will be providing work or services at the Place of the Work. The Owner shall have the unfettered and absolute right and discretion to order the Contractor to remove from the Project and replace, without cost to the Owner, any individual who is unable to comply with this paragraph."

## SC3.14 GC 3.9 DOCUMENTS AT THE SITE

3.14.1 Delete paragraph 3.9.1 and replace it with the following:

"3.9.1 The Contractor shall keep one copy of the current Contract Documents, As-Built Drawings, Supplemental Instructions, contemplated change orders, Change Orders, Change Directives, cash allowance disbursement authorizations, reviewed Shop Drawings, Submittals, reports and records of meetings at the Place of the Work, in good order and available to the Owner and Consultant."

## SC3.15 GC 3.10 SHOP DRAWINGS

3.15.1 Delete paragraph 3.10.3 in its entirety and replace it with the following:

"3.10.3 The Contractor shall prepare a Shop Drawing schedule acceptable to the Owner and the Consultant prior to the first application for payment. A draft of the proposed Shop Drawing schedule shall be submitted by the Contractor to the Consultant and the Owner for approval. The draft Shop Drawing schedule shall clearly indicate the phasing of Shop Drawing submissions."

3.15.2 Add new paragraphs 3.10.13 to 3.10.16 as follows:

"3.10.13 Reviewed Shop Drawings shall not authorize a change in the Contract Price and/or the Contract Time.

3.10.14 The Contractor shall not use the term "by others" on Shop Drawings or other submittals, but shall identify the responsible trade, Subcontractor or Supplier where such work is within the scope of the Work.

3.10.15 Where Specifications require the Shop Drawings to bear the seal and signature of a professional engineer, such professional engineer 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.

3.10.16 The Owner's approval of Shop Drawings will be an approval of general detail and arrangement only. The Owner's approval shall not relieve the Contractor from its responsibility for deviations from the Contract Documents, unless the Contractor in writing has notified the Owner of such deviations at the time of submission of the Shop Drawings and the Owner has given written approval to the specific deviations. The Owner's approval also shall not relieve the Contractor from responsibility for defective Work resulting from errors or omissions of any kind on the approved Shop Drawings and shall not constitute authorization to the Contractor to perform additional Work or changed Work. The Contractor is responsible for dimensions to be confirmed and correlated at the job site, for information that pertains solely to fabrication processes, or techniques of construction and installation."

## SC3.16 GC 3.11 USE OF THE WORK

3.16.1 Add new paragraphs 3.11.3 and 3.11.4:

"3.11.3 The Owner or its contractors shall have the right to enter or occupy the Place of the Work, in whole or part, and whether partially or entirely completed, for the purpose of installing, testing or storing fixtures, equipment or machinery before the issuance of a final certificate for payment if such entry and occupancy does not materially interfere with the Contractor in the performance and completion of this Contract within the Contract Time. Such entry or occupancy shall not be considered as acceptance of the Work, in whole or in part, nor shall it relieve the Contractor of its responsibility to complete the Contract.

3.11.4 The Owner reserves the right to take possession of and use for any intended purpose any portion or all of the undelivered portion of the Project, even though Substantial Performance of the Work may not have been attained, provided that such taking of possession and use will not interfere, in any material way, with the progress of the Work. The taking of possession or use of any such portion of the Project shall not be deemed to be the Owner's acknowledgement or acceptance of the Work or the Project, nor shall it entitle the Contractor to an adjustment in the Contract Time or Contract Price, nor shall it 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 shall continue to apply notwithstanding such taking of possession and use."

## SC3.17 GC 3.13 CLEANUP

3.17.1 Amend paragraph 3.13.1 by adding the following to the end of that paragraph:

"The Contractor shall ensure the Place of the Work is cleaned and left in a tidy condition on a daily basis. In the event that the Contractor fails to remove waste and debris as provided in this GC 3.13, then, the Owner or the Consultant may give the Contractor twenty-four (24) hours' written notice to meet its obligations respecting clean up. Should the Contractor fail to meet its obligations pursuant to this GC 3.13 within the twenty-four (24) hour period next following delivery of the notice, the Owner may remove such waste and debris and deduct from payments otherwise due to the Contractor the Owner's costs for such clean up, including a reasonable mark-up for administration."

## SC3.18 GC 3.14 STANDARD OF CARE

3.18.1 Add new GC 3.14 as follows:

"**GC 3.14 STANDARD OF CARE**

3.14.1 In performing this Contract the Contractor shall exercise a standard of care, skill and diligence that would normally be exercised by an experienced and prudent contractor supplying similar services for similar projects. The Contractor acknowledges and agrees that throughout the Contract, the Contractor's obligations, duties and responsibilities shall be interpreted in accordance with this standard. The Contractor shall exercise the same standard of care, skill and diligence in respect of any Products, Subcontractors, Suppliers, personnel, or procedures which it may recommend to the Owner or employ on the Project.

3.14.2 The Contractor represents, covenants and warrants to the Owner that:

.1 the personnel it assigns to the Project are appropriately experienced;

.2 it has a sufficient staff of qualified and competent personnel to replace its designated supervisor and project manager, subject to the Owner's approval, in the event of death, incapacity, removal or resignation; and

.3 there are no pending, threatened or anticipated claims that would have a material effect on the financial ability of the Contractor to perform this Contract.

3.14.3 The Contractor shall perform the Work so as to avoid disturbing the occupants of the Place of the Work and any adjacent structures or the public in general, and shall perform the Work in the least intrusive manner possible and shall respect and comply with local regulations and

requirements regarding permitted work hours, noise levels and work conditions. The Contractor, without in any way limiting its responsibilities under this Contract, shall take all reasonable steps to avoid interference with fire exits, building access and egress, continuity of electric power and all other utilities, to suppress dust and noise, to avoid conditions likely to propagate mould or fungus of any kind, and shall take all other steps reasonably necessary to promote and maintain the safety and comfort of the occupants of the Place of the Work and any adjacent structures and the public in general, and/or to maintain access to and the operation of the same. Without Owner's prior approval, the Contractor shall not permit any personnel, workers or Subcontractors to use any existing facilities including, without limitation, elevators, lavatories, toilets, entrances and parking areas other than those designated by the Owner."

## SC3.19 GC 3.15 CONTRACTOR'S USE OF PERMANENT EQUIPMENT OR SYSTEMS

3.19.1 Add a new GC 3.15 as follows:

"**GC 3.15 CONTRACTOR'S USE OF PERMANENT EQUIPMENT OR SYSTEMS**

3.15.1 Upon receiving the Contractor's written request the Owner may, but is under no obligation to, permit the Contractor to make use of elements of the mechanical and electrical systems or equipment comprising a permanent part of the Work for the purpose of completing the Project. In such event the Contractor shall:

.1 perform all preventative maintenance services on such systems and equipment as and when specified by the manufacturer;

.2 prior to applying for the certificate of Substantial Performance of the Work, clean and make good, to the satisfaction of the Consultant, all such systems and equipment;

.3 pay any and all costs associated with such use, preventative maintenance services, cleaning and making good.

3.15.2 Where the Contractor has made use of elements of the mechanical and electrical systems or equipment comprising a permanent part of the Work, as described in paragraph 3.15.1, the Contractor shall obtain, from the manufacturer or Supplier of the systems or equipment used, a confirmation from such manufacturer or Supplier that the warranty on such systems or equipment begins on the date of Substantial Performance of the Work and is not impaired in scope or reduced in time by virtue of the Contractor's use of such systems or equipment."

## SC3.20 GC 4.1 CASH ALLOWANCES

3.20.1 Delete paragraphs 4.1.4 and 4.1.5 and replace them with the following:

"4.1.4 Where the actual cost of the Work under any cash allowance exceeds or is expected to exceed the amount of the allowance, the Contractor shall notify the Owner in writing indicating the amount of additional funds required and, in such case, the Contractor shall not proceed with the cash allowance work until the Contractor receives written instructions from the Owner. Unexpended amounts from other cash allowances may be reallocated at the Consultant's direction to cover the shortfall and, in that case, the Contractor is not entitled to any amount for overhead and profit. Where no such direction is given, or where the actual cost exceeds the allowance even after reallocation of unexpended amounts from other cash allowances, the Contractor shall be compensated for the excess incurred and substantiated, plus an amount for overhead and profit as set out in the Contract Documents, but on the excess only.

4.1.5 The net amount of any unexpended cash allowances, after providing for any reallocations as contemplated in paragraph 4.1.4, shall be deducted from the Contract Price by Change Order without any adjustment for the Contractor's overhead and profit on such amount."

3.20.2 Add new paragraphs 4.1.8 and 4.1.9 as follows:

"4.1.8 Purchases from cash allowances must be authorized by written instructions issued by the Consultant and the form and methods of accounting for costs shall be agreed to by the Consultant and the Contractor before proceeding with the purchase.

4.1.9 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."

## SC3.21 GC 5.1 FINANCING INFORMATION REQUIRED OF THE OWNER

3.21.1 Delete GC 5.1.

## SC3.22 GC 5.1A PROPER INVOICE FOR PROGRESS PAYMENT

3.22.1 Add a new GC 5.1A as follows:

"**GC 5.1A PROPER INVOICE FOR PROGRESS PAYMENT**

5.1A.1 In this Contract a Proper Invoice for progress payment shall mean an application for payment made by the Contractor that:

.1 is delivered to the Owner via email to both fservices@scdsb.on.ca and the specified Project Coordinator as well as to the Prime Consultant. If an invoice is received after 4:00 PM it is deemed to have been received on the next business day; and it is noted that any invoice received prior to the last day of the month for which the invoice is for it is not deemed to have been received until the last day of the month.

.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;

.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;

.6 the name, title, telephone number and mailing address of the person to whom payment is to be sent;

.7 where the invoice amount includes amounts charged on the basis of hourly rates, documentation in support of the amount claimed, including dates that services were performed, identity of the person(s) involved, the hours spent, and a description of the services performed;

.8 copies of any Change Orders for which the Contractor is claiming payment, together with all backup documents;

.9 a statement based on the schedule of values for the Work;

.10 a current valid clearance certificate issued by the WSIB;

.11 certificates of insurance confirming the placement of the insurance coverage required by this Contract;

.12 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;

.13 in respect of any subcontract whose value exceeds $100,000, a statutory declaration in form CCDC 9B – 2001;

.14 an updated Construction Schedule in accordance with paragraph 3.5.1.3 of GC 3.5 – CONSTRUCTION SCHEDULE."

## SC3.23 GC 5.2 APPLICATIONS FOR PROGRESS PAYMENT

3.23.1 Delete paragraph 5.2.1 and replace it with the following:

"5.2.1 Proper Invoices for progress payment may be made monthly as the Work progresses."

3.23.2 Delete paragraph 5.2.2.

3.23.3 Amend paragraph 5.2.3 by adding the following to the end of that paragraph:

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

3.23.4 Delete paragraph 5.2.4 and replace it with the following:

"5.2.4 The Contractor shall, within 10 Working Days after Contract signing 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 a line item which assigns an appropriate portion of the Contract Price for quality control and closeout of the Work."

3.23.5 Amend paragraph 5.2.7 by adding the following to the end of that paragraph:

"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 13.2 – OWNERSHIP OF MATERIALS."

## SC3.24 GC 5.3 PROGRESS PAYMENT

3.24.1 Delete paragraph 5.3.1 and replace it with the following:

"5.3.1 The Consultant will issue to the Owner and copy to the Contractor, no later than 10 calendar days after the date the Owner receives a Proper Invoice for progress payment, 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 Act, and subject to the holdback provisions of the Act, 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 PROGRESS PAYMENT. For certainty, and without limitation, the Owner may refuse to pay all or any portion of an application for progress payment where:

.1 the application does not comply with all of the requirements of a Proper Invoice in GC 5.1A – PROPER INVOICE FOR PROGRESS PAYMENT; and/or

.2 the amount applied for exceeds the amount stated in the certificate for payment issued by the Consultant pursuant to paragraph 5.3.1.

5.3.3 Payment by the Owner shall not preclude the Owner from thereafter disputing any of the items for which payment was made and shall not be construed as acceptance of any part of the Work."

## SC3.25 GC 5.4 SUBSTANTIAL PERFORMANCE OF THE WORK

3.25.1 Delete paragraph 5.4.3 and replace it with the following:

"5.4.3 Immediately after the issuance of the certificate of Substantial Performance of the Work, the Contractor, in consultation with the Consultant, shall establish reasonable dates for finishing the Work and correcting deficiencies.

5.4.4 Before submitting the written application referred to in paragraph 5.4.1, the Contractor shall submit to the Consultant all:

.1 guarantees, warranties and certificates;

.2 testing and balancing reports and spare parts;

.3 distribution system diagrams and Shop Drawings;

.4 maintenance and operational manuals, instructions and materials;

.5 existing reports and correspondence from authorities having jurisdiction,

and other close-out materials or documentation required to be submitted under the Contract (excluding the As-Built Drawings), together with written proof acceptable to the Owner and the Consultant that the Work has been performed in conformance with the requirements of municipal, governmental, and utility authorities having jurisdiction at the Place of the Work. The Contractor shall deliver the materials and documentation listed in this paragraph in an electronic format that is readable on the Owner's information technology infrastructure.

5.4.5 If the Contractor fails to deliver the documents and materials described in paragraph 5.4.4, then, provided that none of the missing documents and materials interferes with the use and occupancy of the Project in a material way, the failure to deliver shall not be grounds for the Consultant to refuse to certify Substantial Performance of the Work. The Consultant may assign a reasonable amount or, where applicable, an amount specified in the Contract Documents, and retain that amount from the written application for Substantial Performance of the Work, until the required documents and materials are delivered.

5.4.6 Within 25 days after the date of Substantial Performance of the Work the Contractor shall deliver to the Consultant final As-Built Drawings, failing which the Consultant may assign a reasonable amount to cover the cost the Owner would incur to prepare the As-Built Drawings or, where applicable, an amount specified in the Contract Documents, and retain that amount from any future amount owing to the Contractor, until the final As-Built Drawings are delivered.

5.4.7 Should any documents or materials not be delivered in accordance with paragraph 5.4.4 or 5.4.6 by the earlier of: (1) 60 days following the issuance of the certificate of Substantial Performance of the Work, and (2) the Contractor's application for final payment under paragraph 5.7.1 of GC 5.7 – FINAL PAYMENT, then the amount(s) previously retained pursuant to paragraphs 5.4.5 and/or 5.4.6 shall be retained by the Owner as compensation for the damages deemed to have been incurred by the Owner, and not as a penalty, arising from the Contractor's failure to deliver the specified documents or materials, and the Contract Price shall be reduced accordingly."

## SC3.26 GC 5.5 PAYMENT OF HOLDBACK UPON SUBSTANTIAL PERFORMANCE OF THE WORK

3.26.1 Delete paragraphs 5.5.3, 5.5.4 and 5.5.5 and replace them with the following:

"5.5.3 Subject to the Owner's right to give notice of non-payment of holdback in accordance with the Act, the Owner will pay the amount authorized by the certificate for payment of the holdback amount in accordance with the provisions of the Act. For certainty, and without limitation, the Owner may refuse to pay a portion of the holdback where the Owner is entitled to deduct and retain amounts in accordance with paragraphs 5.4.5, 5.4.6 and/or 5.4.7."

## SC3.27 GC 5.6A PROPER INVOICE FOR FINAL PAYMENT

3.27.1 Add a new GC 5.6A as follows:

"**GC 5.6A PROPER INVOICE FOR FINAL PAYMENT**

5.6A.1 In this Contract a Proper Invoice for final payment shall mean an application for final payment made by the Contractor that:

.1 is delivered to the Owner via email to both fservices@scdsb.on.ca and the specified Project Coordinator as well as the Prime Consultant. If an invoice is received after 4:00 PM it is deemed to have been received on the next business day and it is noted that any invoice received prior to the last day of the month for which the invoice is for it is not deemed to have been received until the last day of the month.

.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;

.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;

.6 the name, title, telephone number and mailing address of the person to whom payment is to be sent;

.7 where the invoice amount includes amounts charged on the basis of hourly rates, documentation in support of the amount claimed, including dates that services were performed, identity of the person(s) involved, the hours spent, and a description of the services performed;

.8 copies of any Change Orders for which the Contractor is claiming payment, together with all backup documents;

.9 a statement based on the schedule of values for the Work;

.10 a current valid clearance certificate issued by the WSIB;

.11 certificates of insurance confirming the placement of the insurance coverage required by this Contract;

.12 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;

.13 in respect of any subcontract whose value exceeds $100,000, a statutory declaration in form CCDC 9B – 2001."

## SC3.28 GC 5.7 FINAL PAYMENT

3.28.1 Delete paragraph 5.7.1 and replace it with the following:

"5.7.1 When the Contractor considers that the Contract is completed, the Contractor shall deliver to the Owner a Proper Invoice for final payment, as provided in paragraph 5.6A.1 of GC 5.6A – PROPER INVOICE FOR FINAL PAYMENT."

3.28.2 Amend paragraph 5.7.2 by adding the following to the end of that paragraph:

"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 documentation required by the Contract Documents including but not limited to the documents and materials listed in paragraphs 5.4.4 and 5.4.6 of GC 5.4 – SUBSTANTIAL PERFORMANCE OF THE WORK have been received and accepted by the Consultant."

3.28.3 Delete paragraph 5.7.4 and replace it with the following:

"5.7.4 Subject to the Owner's right to give notice of non-payment in accordance with the Act, 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 5.6A – PROPER INVOICE FOR FINAL PAYMENT. For certainty, and without limitation, the Owner may refuse to pay all or any portion of an application for final payment where:

.1 the application does not comply with all of the requirements of a Proper Invoice in GC 5.6A – PROPER INVOICE FOR FINAL PAYMENT; and/or

.2 the amount applied for exceeds the amount stated in the certificate for payment issued by the Consultant pursuant to paragraph 5.7.3.

5.7.5 Payment by the Owner shall not preclude the Owner from thereafter disputing any of the items for which payment was made and shall not be construed as acceptance of any part of the Work."

## SC3.29 GC 5.8 WITHHOLDING OF PAYMENT

3.29.1 Add new paragraphs 5.8.2 and 5.8.3 as follows:

"5.8.2 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 previous over-payment made to the Contractor, damages or costs incurred by the Owner, or to the extent as may be necessary to protect the Owner from loss or damage as a result of the Contractor's failure to perform any of its material obligations under this Contract in a timely manner or at all.

5.8.3 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 cost of any required remedial work, or toward damages or losses suffered and for which the Owner is entitled to compensation under the Contract."

## SC3.30 GC 6.1 OWNER'S RIGHT TO MAKE CHANGES

3.30.1 Amend paragraph 6.1.2 by adding the following to the end of that paragraph:

"This requirement 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, Contract Time and/or the Contract shall be barred unless there has been strict compliance with PART 6 – CHANGES IN THE WORK. No course of conduct or dealing between the parties, no express or implied acceptance of alterations or additions to the Work, and no claims that the Owner has been unjustly enriched by any alteration or addition to the Work, whether in fact there is any such unjust enrichment or not, shall be the basis of a claim for damages or additional payment under this Contract or a claim for an extension of the Contract Time, or a claim for an amendment to the Contract. 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 (including 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."

3.30.2 Add a new paragraph 6.1.3 as follows:

"6.1.3 The Contractor agrees that changes resulting from construction coordination including but not limited to site surface conditions, site coordination and Subcontractor and Supplier coordination, are included in the Contract Price and shall not entitle the Contractor to claim any increase to the Contract Price in relation to coordination."

## SC3.31 GC 6.2 CHANGE ORDER

3.31.1 Amend paragraph 6.2.1 by adding the following sentence to the end of that paragraph:

"Such adjustments and method of adjustment must be submitted by the Contractor to the Consultant in sufficient time to prevent interruption of the orderly process of construction and, in any event, no later than ten (10) days from the Contractor's receipt of the proposed change in the Work."

3.31.2 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 of the Contractor and shall be the total cost to the Owner; or

.2 by unit prices established in the Contract or subsequently agreed upon. Unit prices shall include overhead, profit, and other reasonable charges of the Contractor 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.

.3 by the amount, net of all credits, of time, materials and Products expended:

(A) by a Subcontractor, applying the labour charge out rates set out in the wage schedule in the Contract Documents together with the actual costs, without mark-up, of materials and Products utilized in the change, plus the Subcontractor's mark-up disclosed in Column A of the table below which applies to material and Product costs only;

(B) by the Contractor, applying the labour charge out rates set out in the wage schedule in the Contract Documents together with the actual costs, without mark-up, of materials and Products utilized in the change, plus the mark-up disclosed in Column B of the table below which applies to material and Product costs only. For greater certainty, the Contractor is not entitled to a mark-up disclosed in Column B of the table below on self-performed additional work.

The Contractor shall also be entitled to the mark-up disclosed in Column B of the table below, on the value of additional work performed by Subcontractors.

| **Value of Additional Work** | **Column A** **Subcontractor Mark-Up on Material and Products only** | **Column B** **Contractor Mark-Up on Material and Products Supplied by the Contractor, and on Subcontractor work** |
|---|---|---|
| $0 to no more than $25,000 | 10% | 10% |
| $0 to no more than $50,000 | 10% | 7.5% |
| $0 to in excess of $50,000 | 5% | 5% |

***Interpretive Note: The mark-ups disclosed in the above table are flat not graduated. For example, a Subcontractor performed change valued at $35,000 attracts a mark-up of 10% for the Subcontractor (on the cost of material and Products only) and 7.5% for the Contractor. The table is not intended to provide one set of mark-ups for the first $25,000 of the change and a different set of mark-ups for the balance.***

6.2.4 The percentage fee mark-ups described in paragraph 6.2.3.3 are intended to cover all profit, general expenses and overhead costs incurred by the Contractor in relation to the change. For greater certainty, the following items are covered by and included in the mark-ups: additional bonding and insurance costs, head office and head office personnel costs, supervision, project management, general account items, small tools, estimating, safety, preparation of As-Build Drawings, coordination and administration and warranty costs, and general clean-up and disposal costs necessary to perform the change in the Work.

6.2.5 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, excluding the items described in paragraph 6.2.4.

6.2.6 The Contractor shall not be entitled to any additional compensation arising out of changes to the Work aside from the amounts determined in accordance with this GC 6.2 ad 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."

## SC3.32 GC 6.3 CHANGE DIRECTIVE

3.32.1 Delete paragraph 6.3.3.

3.32.2 Amend paragraph 6.3.7 by inserting the words "Subject to paragraph 6.3.14," at the beginning of that paragraph. Further amend paragraph 6.3.7 as follows:

(a) Delete paragraph 6.3.7.1 and replace it with the following:

"6.3.7.1 salaries, wages and benefits paid to personnel in the direct employ of the Contractor, applying the labour rates set out in the wage schedule in the Contract Documents or as otherwise agreed between the Owner and Contractor for personnel

(A) performing the Work, including necessary supervisory services;

(B) engaged in the preparation of Shop Drawings, fabrication Drawings, coordination Drawings and As-Built Drawings; or

(C) including clerical staff engaged in processing changes in the Work."

(b) Delete paragraphs 6.3.7.15 and 6.3.7.17.

3.32.3 Amend paragraph 6.3.12 by adding the following to the beginning of that paragraph:

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

3.32.4 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 salaries, wages and benefits of personnel described in paragraph 6.3.7.1 and the contributions, assessments or taxes referred to in paragraph 6.3.7.2;

.2 capital expenses and interest on capital;

.3 general cleanup, except where the performance of the work attributed to the Change Directive causes specific additional cleanup requirements;

.4 wages paid for field supervision of Subcontractors;

.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 any costs or expenses attributable to the negligence, improper work, deficiencies, or breaches of contract by the Contractor or any Subcontractor;

.7 any 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."

## SC3.33 GC 6.4 CONCEALED OR UNKNOWN CONDITIONS

3.33.1 Add a new paragraph 6.4.0 as follows:

"6.4.0 The Contractor confirms that, before signing the Contract, it carefully investigated and examined the Place of the Work, the Contract Documents and any other documents made available by the Owner, and applied to such investigations and examinations the degree of care, skill and diligence described in paragraph 3.14.1 of GC 3.14 – STANDARD OF CARE. Through such investigations and examinations, the Contractor 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 including, but not necessarily limited to, such things as:

.1 the nature and location of the Work and the Project site, including the availability / restrictions of access to the Project site;

.2 the character and content of the Work to be done;

.3 the character and scope of work to be done by other contractors and Owner's forces;

.4 the availability of labour, equipment, material, Products and facilities needed for the on-time performance and completion of the Work;

.5 all labour restrictions, including availability of skilled trades;

.6 safety hazards and labour contract negotiations which may have an impact on the performance of the Work;

.7 the location of any required utility service;

.8 without limiting the generality of the foregoing, any contingency and/or circumstances which may affect the Work.

If the Contractor has not conducted the investigations and examinations described in this paragraph 6.4.0, it is deemed to assume all risk of conditions or circumstances now existing or arising in the course of the Work which could make the Work more expensive or more difficult to perform than was contemplated at the time the Contract was signed. 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 by such investigations or examinations made before the signing of the Contract."

3.33.2 Amend paragraphs 6.4.1.1 and 6.4.1.2 by adding the following words to the end of each of those paragraphs:

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

3.33.3 Amend paragraph 6.4.2 by inserting the words "and were concealed from discovery notwithstanding the conduct of the investigations and examinations described in paragraph 6.4.0" after the word "materially" in the second line.

3.33.4 Delete paragraph 6.4.3 and substitute the following:

"6.4.3 If the Consultant makes a finding pursuant to paragraph 6.4.2 that no change in the Contract Price or Contract Time is justified, the Consultant shall report in writing the reasons for this finding to the Owner and the Contractor."

## SC3.34 GC 6.5 DELAYS

3.34.1 Amend paragraphs 6.5.1 and 6.5.2 by deleting the last sentence in each paragraph and substituting the following in each case:

"The Contractor shall be reimbursed by the Owner for reasonable direct costs directly flowing from the delay, but excluding the costs of the Contractor's head office personnel and overhead costs, and

excluding any consequential, indirect or special damages, and excluding any loss of profit or loss of opportunity costs and damages, both direct and indirect, arising from or caused by such delay, and regardless of whether any such costs, damages or claims are made or incurred by the Contractor or any Subcontractor."

3.34.2 Amend paragraph 6.5.3 by adding the following to the end of that paragraph:

", in which case the Contractor shall be reimbursed by the Owner for reasonable direct costs directly flowing from the delay, but excluding the costs of the Contractor's head office personnel and overhead costs, and excluding any consequential, indirect or special damages, and excluding any loss of profit or loss of opportunity costs and damages, both direct and indirect, arising from or caused by such delay, and regardless of whether any such costs, damages or claims are made or incurred by the Contractor or any Subcontractor."

3.34.3 Amend paragraph 6.5.4 by adding the following to the end of that paragraph:

"For greater certainty, it is the intention of the parties that an extension for delay will be considered only when the Contractor demonstrates to the Owner that the delay affects the critical path of the Work. Without in any way limiting the generality of the foregoing, it is a condition precedent to the Contractor's claim for extension of the Contract Time and for additional compensation that the notice provisions in this paragraph be strictly adhered to in each instance, except where the event of delay itself reasonably precludes strict adherence to such notice provisions. If the Contractor fails to comply with such notice provisions, it shall be deemed to have waived the right to claim for the effects of delay."

3.34.4 Add new paragraphs 6.5.6, 6.5.7, 6.5.8 and 6.5.9 as follows:

"6.5.6 If the Contractor is delayed in the performance of the Work by an act or omission of the Contractor or anyone employed or engaged by the Contractor directly or indirectly, or by any cause within the Contractor's control, then the Contract Time shall be extended for such reasonable time as the Consultant may decide in consultation with the Owner. In addition, the Owner shall be reimbursed by the Contractor for all reasonable costs and expenses incurred by the Owner as a result of such delay, including all charges for services required by the Owner from the Consultant or any subconsultants, project managers, or others employed or engaged by the Owner.

6.5.7 The Contractor shall be responsible for the care, maintenance and protection of the Work in the event of any suspension of construction as a result of the delay described in paragraphs 6.5.1, 6.5.2 or 6.5.3. In the event of such suspension, the Contractor shall be reimbursed by the Owner for the reasonable costs incurred by the Contractor for such care, maintenance and protection, but excluding the costs of the Contractor's head office personnel. The Contractor's entitlement to costs pursuant to this paragraph, if any, shall be in addition to amounts, if any, to which the Contractor is entitled pursuant to paragraphs 6.5.1, 6.5.2 or 6.5.3.

6.5.8 Without limiting the obligations of the Contractor described in GC 3.2 – CONSTRUCTION BY OWNER OR OTHER CONTRACTORS and GC 9.4 – CONSTRUCTION SAFETY, the Owner may, by Notice in Writing, direct the Contractor to stop the Work where the Owner determines that there is an imminent risk to the safety of persons or property at the Place of the Work. In the event that the Contractor receives such notice, it shall immediately stop the Work and secure the Project site. The Contractor shall not be entitled to an extension of the Contract Time or to an increase in the Contract Price unless the resulting delay, if any, would entitle the Contractor to an extension of the Contract Time or the reimbursement of the Contractor's costs as provided in paragraphs 6.5.1, 6.5.2 or 6.5.3.

6.5.9 If the Contractor is delayed in the performance of the Work by a Labour Dispute, civil disobedience, riot, sabotage, acts of God or any of the events described in paragraphs 6.5.3.1 through 6.5.3.4 for a period of sixty (60) calendar days or longer, the Owner may terminate the Contract by giving Notice in Writing to that effect. In such event, the Owner shall pay for the Work performed up to the effective date of termination, including mobilization and demobilization costs, and for such additional costs, if any, directly flowing from such termination which are a reasonable consequence of the termination, but excluding any

consequential, indirect or special damages, and any claims for loss of profit or opportunity. The Owner shall not be liable to the Contractor for any other claims, costs or damages whatsoever arising from such termination of the Contract."

## SC3.35 GC 7.1 OWNER'S RIGHT TO PERFORM THE WORK, TERMINATE THE CONTRACTOR'S RIGHT TO CONTINUE WITH THE WORK OR TERMINATE THE CONTRACT

3.35.1 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 latest approved 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, give the Contractor Notice in Writing that the Contractor is in default of the Contractor's contractual obligations and instruct the Contractor to correct the default in the 5 Working Days immediately following the receipt of such Notice in Writing, but without affecting in any respect the liability of the Contractor in respect of earlier defaults."

3.35.2 Add a new paragraph 7.1.5A immediately after paragraph 7.1.5 as follows:

"7.1.5A The Owner may terminate the Contract at any time for any or no reason. 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 costs, if any, directly flowing from such termination which are a reasonable consequence of the termination, but excluding any consequential, indirect or special damages, and any claims for loss of profit or opportunity. The Owner shall not be liable to the Contractor for any other claims, costs or damages whatsoever arising from such termination of the Contract."

## SC3.36 GC 7.2 CONTRACTOR'S RIGHT TO SUSPEND THE WORK OR TERMINATE THE CONTRACT

3.36.1 Amend paragraph 7.2.2, in line 1, by deleting "20" and replacing it with "45".

3.36.2 Amend paragraph 7.2.3 as follows:

(a) Delete paragraph 7.2.3.1;

(b) Amend paragraph 7.2.3.3 by adding the words ", except where the Owner has a bona fide claim for setoff," after the word "Consultant";

(c) Amend paragraph 7.2.3.4 by deleting the words ", except for GC 5.1 – FINANCING INFORMATION REQUIRED OF THE OWNER";

(d) Add the following to the end of the paragraph:

"The foregoing defaults in contractual obligations shall not apply to the withholding of certificates or payments, or both, in accordance with the Contract Documents."

3.36.3 Delete paragraph 7.2.5 and replace it with the following:

"7.2.5 If the default cannot be corrected within the 5 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 an acceptable 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 Place of the Work is 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. Subject to the Contractor's

obligation to mitigate costs, the Contractor shall also be entitled to recover the costs directly flowing from and which are a reasonable consequence of the termination, including the costs of demobilization and direct losses sustained on Products and Construction Equipment, but excluding the costs of the Contractor's head office personnel and overhead costs, and excluding any consequential, indirect or special damages, and excluding any claims for loss of profit or loss of opportunity."

## SC3.37 GC 8.2 NEGOTIATION, MEDIATION AND ARBITRATION

3.37.1 Amend paragraphs 8.2.6, 8.2.7 and 8.2.8, in the first line of each paragraph, by deleting "10" and replacing it with "20" in each case.

3.37.2 Add new paragraphs 8.2.9, 8.2.10, 8.2.11, 8.2.12, 8.2.13 and 8.2.14 as follows:

"8.2.9 Within 10 Working Days of receipt of a Notice in Writing given pursuant to paragraph 8.2.6, the Owner or the Contractor may give the Consultant a Notice in Writing containing:

.1 a copy of the notice of arbitration;

.2 a copy of GC 8.2, as amended by these Supplementary Conditions;

.3 any claims or issues which the Contractor or the Owner, as the case may be, wishes to raise in relation to the Consultant arising out of the issues in dispute in the arbitration.

8.2.10 The Owner and the Contractor agree that, upon giving the Notice in Writing provided in paragraph 8.2.9, the Consultant may elect to become a full party to the arbitration commenced pursuant to paragraph 8.2.6. The Owner and the Contractor acknowledge that, if the Consultant so elects, the Consultant shall be a party to the arbitration within the meaning of the Rules referred to in paragraph 8.2.6 by virtue of the agreement between the Consultant and the Owner.

8.2.11 Failure of the Owner or the Contractor to give the Notice in Writing provided in paragraph 8.2.9 shall not prevent either the Owner or the Contractor from commencing or pursuing an application, action, counterclaim or any other proceeding against the Consultant arising out of the issues in dispute in the arbitration between the Owner and the Contractor brought under paragraph 8.2.6.

8.2.12 If the Consultant is given the Notice in Writing contemplated by paragraph 8.2.9, the Consultant may participate in the appointment of the arbitrator and, notwithstanding the Rules referred to in paragraph 8.2.6, the time period for reaching agreement on the appointment of the arbitrator shall begin to run from the date on which the Consultant receives the notice described in paragraph 8.2.9.

8.2.13 The arbitrator in an arbitration in which the Consultant is a party may:

.1 determine whether any notice given pursuant to paragraph 8.2.9 is, in substance, sufficient, the notice requirements being interpreted liberally; and,

.2 make any procedural order considered necessary to facilitate the participation of the Consultant as a party to the arbitration.

8.2.14 The provisions of paragraph 8.2.9 shall apply mutatis mutandis to written notice to be given by the Consultant to any subconsultant, except that the subconsultant is not entitled to any election as outlined in paragraph 8.2.10 and is deemed to be bound by the arbitration proceeding."

## SC3.38 GC 9.1 PROTECTION OF WORK AND PROPERTY

3.38.1 Amend paragraph 9.1.1.1 by adding the following to the end of that paragraph:

", which the Contractor could not reasonably have discovered applying the degree of care and skill described in paragraph 3.4.1 of GC 3.4 – DOCUMENT REVIEW."

3.38.2 Delete paragraph 9.1.2 in its entirety and replace it with the following:

"9.1.2 Before commencing any Work, the Contractor shall determine the locations of all underground utilities and structures indicated in the Contract Documents or that are discoverable by applying to an inspection of the Place of the Work the degree of care and skill described in GC 3.14 – STANDARD OF CARE."

3.38.3 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 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."

## SC3.39 GC 9.2 TOXIC AND HAZARDOUS SUBSTANCES

3.39.1 Amend paragraph 9.2.6 by inserting the following after the word "responsible" in line 2 of that paragraph:

"or whether 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,"

3.39.2 Amend paragraph 9.2.7.3 by inserting the following words after the word "delay" in the second line of that paragraph:

", but excluding the costs of the Contractor's head office personnel and overhead costs, and excluding any consequential, indirect or special damages, and excluding any claims for loss of profit or opportunity"

3.39.3 Delete paragraph 9.2.7.4.

3.39.4 Amend paragraph 9.2.8 by inserting the following after the word "responsible" in line 2 of that paragraph:

"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,"

3.39.5 Add a new paragraphs 9.2.10 and 9.2.11 as follows:

"9.2.10 Without limiting its other obligations under this GC 9.2, the Contractor acknowledges that its obligations under the Contract include compliance with the Environmental Programs. The Contractor acknowledges that the Owner may suffer loss and damage should the Contractor fail to comply with the Environmental Programs and agrees to indemnify and hold harmless the Owner with respect to any loss or damage to which the Owner is exposed by the Contractor's failure to comply. The Contractor acknowledges that should it fail to comply with the Environmental Programs, such failure will constitute a failure to comply with the Contract to a substantial degree within the meaning of paragraph 7.1.2 of GC 7.1 – OWNER'S RIGHT TO PERFORM THE WORK, TERMINATE THE CONTRACTOR'S RIGHT TO CONTINUE WITH THE WORK OR TERMINATE THE CONTRACT.

9.2.11 The Contractor shall indemnify the Owner and its board members, trustees, officers, directors, employees and agents of the Owner in respect of any loss, costs or expense or any 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, its board members, trustees, officers, directors, employees and agents in respect of any loss, costs, expenses 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."

## SC3.40 GC 9.4 CONSTRUCTION SAFETY

3.40.1 Amend paragraph 9.4.1 by deleting the first line of that paragraph and replacing it with the following: "The Contractor".

3.40.2 Add new paragraphs 9.4.2 to 9.4.5 as follows:

"9.4.2 Without limiting the generality of paragraph 9.4.1, the Contractor shall be and shall assume all of the responsibilities of the "constructor" under the OHSA and shall file the "Notice of Project" as "constructor" with the appropriate government agency.

9.4.3 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. The Contractor also undertakes to provide such health and construction safety instruction and training to 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" under the OHSA or its responsibility for construction safety on the Project.

9.4.4 The Contractor shall indemnify and save harmless the Owner and its agents, board members, trustees, officers, directors, employees, consultants, successors and assigns from and against any and all liability, costs, expenses, 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.

9.4.5 The Contractor shall ensure that every "controlled Product" used at the Project site shall meet the labelling requirements and shall have an updated corresponding "Material Safety Data Sheet", all as required by the WHMIS legislation. The Contractor shall ensure that all Material Safety Data Sheets are and are made available for review at the Project site."

## SC3.41 GC 9.5 MOULD

3.41.1 Amend paragraph 9.5.3.3 by inserting the following words after the word "delay," in line 3 of that paragraph:

"but excluding the costs of the Contractor's head office personnel and overhead costs, and excluding any consequential, indirect or special damages, and excluding any loss of profit or loss of opportunity costs and damages, both direct and indirect, arising from or caused by such delay, and regardless of whether any such costs, damages or claims are made or incurred by the Contractor or any Subcontractor,"

## SC3.42 GC 10.1 TAXES AND DUTIES

3.42.1 Amend paragraph 10.1.2 by adding the words ", without any mark-up" to the end of that paragraph.

3.42.2 Add new paragraphs 10.1.3, 10.1.4, 10.1.5 and 10.1.6 as follows:

"10.1.3 Where 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 or the Owner's representative, assist with application for any exemption, recovery or refund of 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 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 obtain from all Subcontractors and Suppliers cooperation 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 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."

## SC3.43 GC 10.2 LAWS, NOTICES, PERMITS, AND FEES

3.43.1 Amend paragraph 10.2.5 by adding the words: "Subject to paragraph 3.4.1 of GC 3.4 – DOCUMENT REVIEW" to the beginning of that paragraph.

3.43.2 Amend paragraph 10.2.6 as follows:

(a) delete the words "performs work knowing it to be" in the second line and substitute "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 substitute "indemnify and save the Owner harmless against any"

(c) add the following sentence to the end of that paragraph:

"In the event the Owner suffers loss or damage as a result of the Contractor's failure to comply with paragraph 10.2.5, and notwithstanding any limitations described in paragraph 12.1.1 of GC 12.1 – INDEMNIFICATION, the Contractor agrees to indemnify and to hold harmless the Owner and the Consultant from and against all claims, demands, losses, costs, damages, actions, suits or proceedings resulting from such failure by the Contractor."

## SC3.44 GC 10.4 WORKERS' COMPENSATION

3.44.1 Amend paragraph 10.4.1 by inserting the words "with each application for any progress payment, and" after the word "Work," in the first line of paragraph 10.4.1.

## SC3.45 GC 11.1 INSURANCE

*The Contractor shall provide, maintain and pay for insurance. The Contractor shall supply a Certificate of Insurance confirming insurance that will indemnify the Owner for loss of use of the property and property damage with limits not less than: $5,000,000.*

3.45.1 Amend paragraph 11.1.1.1 by adding the following sentence to the end of that paragraph:

"To the extent not already described in this paragraph, the Contractor shall provide legal liability coverage for compensatory damages because of bodily injury or property damage to third parties arising from all operations of the insured, including premises and operations, Subcontractors' contingent liability, personal injury resulting from protection of persons / property, contractual liability (blanket), broad form property damage, employees as named insureds, cross liability clause and voluntary medical payments."

3.45.2 Add a new paragraph 11.1.1.4A immediately after paragraph 11.1.1.4 as follows:

"11.1.1.4A In addition to the coverage's described in CCDC 41, include:

- all risks of direct physical loss including flood;
- full replacement value, as basis for settlement;
- the following deductibles: for flood at $50,000 and other at $50,000."

3.45.3 Amend paragraph 11.1.2 by adding the following to the end of that paragraph:

"11.1.2 The Owner's acceptance of the Contractor's delivery of any document evidencing the required policies of insurance does not constitute approval or agreement by the Owner that the insurance requirements have been met or that the insurance policies are in compliance with the requirements of this Contract. Failure of the Owner to identify a deficiency from evidence provided will not be construed as a waiver of the Contractor's obligation to maintain the insurance policies required by this Contract."

3.45.4 Add new paragraphs 11.1.9 to 11.1.13 as follows:

"11.1.9 All occurrences and claims shall be reported immediately in writing to the Owner providing at least the following particulars:

.1 date, time and location of occurrence;

.2 cause and description of circumstances;

.3 estimate of loss or damage;

.4 names and telephone numbers of persons to contact.

11.1.10 Except for policies of automobile insurance, all insurance policies in any way related to the Work and secured and maintained by the Contractor shall include clauses stating each underwriter will waive all rights of recovery, under subrogation or otherwise, against the Owner and the Consultant (except in the event of design related acts errors and omissions).

11.1.11 All insurance policies and coverage required of the Contractor will be primary over any other insurance that might be carried by the Owner.

11.1.12 By requiring insurance, the Owner does not represent that coverage and limits will necessarily be adequate to protect the Contractor. The insurance effected or procured by the Contractor will not reduce or limit the Contractor's contractual obligation to indemnify and defend the Owner for claims or suits which result from or are connected with the performance of this Contract.

11.1.13 Except for policies of automobile insurance, all insurance policies in any way related to the Work and secured and maintained by the Contractor shall include clauses stating each insurer will waive all rights of recovery, under subrogation or otherwise, against the Owner."

## SC3.46 GC 11.2 CONTRACT SECURITY

3.46.1 Amend paragraph 11.2.1 by deleting the words "specified in the Contract Documents" and replace them with "specified in the Act".

3.46.2 Amend paragraph 11.2.2 as follows:

(a) by deleting the words "If the Contract Documents require surety bonds to be provided, such" and replacing them with "Such"; and

(b) by deleting the words "the latest edition of the CCDC approved bond forms" and replacing them with "the *Act*".

## SC3.47 GC 12.1 INDEMNIFICATION

3.47.1 Delete paragraphs 12.1.1 through 12.1.5 and replace them with the following:

"12.1.1 The Contractor shall defend, indemnify and hold harmless the Owner, its agents, employees, trustees, officers, directors and assigns from and against all claims, demands, damages, losses, expenses, costs including legal fees, actions, suits or proceedings (collectively "Claims") by whomsoever made, brought or prosecuted in any manner, arising out of, resulting from or attributable, directly or indirectly, to the Contractor's or any Subcontractor's performance or non-performance of the Contract, including Claims arising out of the condition of the Work, the Project site, adjoining land, driveways, streets or alleys used in connection with the performance of the Work, regardless of whether or not caused in part by a party indemnified hereunder. It is expressly understood that the Contractor will save harmless the Owner from all Claims made by any party other than the Contractor itself, financial or otherwise, relating to labour and materials furnished by the Contractor or by others for the Work.

12.1.2 The Owner shall indemnify and hold harmless the Contractor, its agents and employees from and against Claims arising out of the Contractor's performance of the Contract which are attributable to a lack of or defect in title or an alleged lack of or defect in title to the Place of the Work.

12.1.3 Notwithstanding the provisions of paragraph 1.1.7 of GC 1.1 – CONTRACT DOCUMENTS, the provisions of GC 12.1 shall govern over the provisions of paragraph 1.3.1 of GC 1.3 – RIGHTS AND REMEDIES."

## SC3.48 GC 12.2 WAIVER OF CLAIMS

3.48.1 Delete paragraphs 12.2.1 through 12.2.10 and replace them with the following:

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

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

.2 those arising from the provisions of GC12.1 – INDEMNIFICATION or GC12.3 – WARRANTY;

.3 those arising from GC9.2 – TOXIC AND HAZARDOUS SUBSTANCES and arising from the Contractor bringing or introducing any toxic or hazardous substances to the Place of the Work after the Contractor commences the Work;

.4 those made by Notice in Writing within a period of six years from the date of Substantial Performance of the Work as set out in the certificate of substantial performance, or within such shorter period as may be prescribed in any limitation statute of the province or territory of the Place of the Work and arising from any liability of the Contractor for damages resulting from the Contractor's performance of the Contract or substantial defects or deficiencies in the Work for which the Contractor is proven responsible. As used herein, "substantial defects or deficiencies" means those defects or deficiencies in the Work where the reasonable cost of repair of such defects or deficiencies, either individually or in the aggregate, exceeds:

(A) if the Contract Price is $2,000,000 or less, the sum of $50,000, before Value Added Taxes;

(B) if the Contract Price exceeds $2,000,000, the sum of $100,000, before Value Added Taxes.

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

.1 those for which Notice in Writing was given prior to the Contractor's application for Substantial Performance of the Work and still unsettled; and

.2 claims for payment for Work completed after the Contractor's application for Substantial Performance of the Work."

## SC3.49 GC 12.3 WARRANTY

3.49.1 Amend paragraph 12.3.1 by adding the following to the end of that paragraph:

"Notwithstanding the foregoing, if an item of Work is not completed at Substantial Performance of the Work, 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."

3.49.2 Amend paragraph 12.3.2 as follows:

(a) by inserting the words, "Subject to paragraph 3.4.1 of GC 3.4 – DOCUMENT REVIEW" at the beginning of that paragraph; and

(b) by adding the following to the end of that paragraph:

"If the Contractor has been permitted to make use of permanent equipment or systems, as provided in GC 3.15 – 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 system was new, clean and unused by the Contractor, except for normal commissioning and startup activities, prior to the date of Substantial Performance of the Work."

3.49.3 Add the following to the end of paragraph 12.3.4:

"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. The Owner shall provide reasonable access to those portions of the Project necessary to perform such work, subject to the Owner's operational requirements. Prior to 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."

3.49.4 Add a new paragraph 12.3.7 as follows:

"12.3.7 The Contractor shall assign to the Owner all warranties, guarantees or other obligations for Work, services or Products performed or supplied by any Subcontractor, Supplier or other person in connection with the Work, and such assignment shall be with the consent of the assigning party where required by law or by the terms of that party's contract. Such assignment shall be in addition to, and shall in no way limit, the warranty rights of the Owner under the Contract Documents."

## SC3.50 PART 13 – OTHER PROVISIONS

3.50.1 Add new "**PART 13 – OTHER PROVISIONS**" as follows:

"**PART 13 OTHER PROVISIONS**

**GC 13.1 CONTRACTOR LIABILITY FOR DAMAGES**

13.1.1 Notwithstanding any other provision in this Contract, if the Owner, as a result of the Contractor's act or omission or breach of contract, incurs damages, costs, fees or expenses, including costs of additional services performed by the Consultant or any subconsultants and including the Owner's reasonable solicitor and own client costs, whether or not such act, omission or breach results in any lien, lien action or other legal proceeding, and whether or not such act, omission or breach results in the Owner taking any of the steps provided for in GC 7,1, all such damages, costs, fees and expenses shall be charged to the Contractor and the Owner shall be entitled to set off and deduct all such damages, costs, fees and expenses from any amount owing to the Contractor and any security or other funds held by the Owner.

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 damages, costs, fees and expenses.

**GC 13.2 OWNERSHIP OF MATERIALS**

13.2.1 Unless otherwise specified, all materials existing at the Place of the Work at the time of execution of the Contract shall remain the property of the Owner. All Work and Products delivered to the Place of the Work by the Contractor shall be the property of the Owner, and shall be free of any encumbrances. The Contractor shall remove all surplus or rejected materials when notified to do so by the Consultant.

**GC 13.3 DAILY REPORTS / DAILY LOGS**

13.3.1 The Contractor shall cause its supervisor, or another competent person, to prepare a daily log or diary reporting on weather conditions, workforce of the Contractor, Subcontractors, Suppliers and any other forces on site and also record the general nature of Project activities. Such log or diary shall also include any extraordinary or emergency events which may occur and also the identities of any persons who visit the site who are not part of the day-to-day workforce.

13.3.2 The Contractor shall also maintain records, either at its head office or at the Project site, recording manpower and material resourcing on the Project, including records which document the activities of the Contractor both as planned and actual.

13.3.3 Upon request by the Owner or the Consultant, the Contractor shall make available for inspection and copying all of the records generated pursuant to this GC 13.3, along with any other routine Project records ordinarily maintained by the Contractor.

**GC 13.4 LIENS AND ACTIONS**

13.4.1 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 Project. If any lien is claimed, filed or registered or any written notice of a lien is delivered by reason of services or materials or 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.

13.4.2 If a lien action or any other action or legal proceeding arising out of the Project is commenced, the Contractor shall take all reasonable steps to remove the Owner from such action or legal proceeding, and shall indemnify the Owner and hold it harmless in such action or legal proceeding.

13.4.3 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 lien, written notice of a lien and/or defending or otherwise dealing with an action or legal proceeding, 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 of the said costs and associated expenses.

**GC 13.5 ADVERTISING AND PUBLIC STATEMENTS**

13.5.1 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 without the prior written approval of the Owner.

**GC 13.6 AMENDMENTS TO THE CONTRACT**

13.6.1 Except for the written 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.

13.6.2 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 representatives, 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."

**END OF SUPPLEMENTARY CONDITIONS**

## 1.1 CONTRACT DOCUMENTS

.1 Contract documents for work under this contract consists of the following:

.1 Standard Construction Document CCDC 2, 2008
.2 Supplementary Conditions, in Division 00.
.3 Specifications as listed in Index to Specifications
.4 Drawings as listed in List of Drawings
.5 All Detail Drawings and Schedules as bound in Project Manual
.6 All Addenda issued prior to closing of the tender
.7 Amendments incorporated prior to the signing of the Contract, as agreed to between the signing parties.

## 1.2 PRODUCTS SUPPLIED BY OWNER

.1 Products, including appliances, indicated on the drawings as "N.I.C.", or so noted in specifications, are not included in the Contract but will be supplied by the Owner. These are to be put in place and connected to services by the Contractor.

.2 The Owner will provide manufacturer's installation instructions for each such product, when available.

.3 The Contractor's duties with respect to products supplied by the Owner include:
.1 Unload and handle at site.
.2 Remove and dispose of packaging. Inspect delivered products notify Owner and Consultant of any damage or missing components.
.3 Temporarily store products in secure and suitable storage, if they are not to be installed immediately.
.4 Install and connect to services as applicable.
.5 Coordinate with millwork subcontractor to provide trim at items installed in cabinetry.

## 1.3 RELATION OF TRADES

.1 These specifications have been divided generally into sections conforming to Construction Specifications Canada Master Format 2004 for the purpose of ready reference. They must be read as a whole. The responsibility for apportioning the work or of settling disputes related to same shall rest entirely with the Contractor.

.2 The Contractor is responsible for co-ordinating all trades. He is solely responsible for determining the lines of demarcation between Contractor and/or trades. Neither the Consultant nor the Owner assume any responsibility for any such determination or for any dispute arising concerning it. No extras will be considered due to any such dispute concerning either labour or materials.

.3 Specifications & drawings form an integral part of the Contract Documents. Any subject or item omitted from one but which is mentioned or reasonably implied in the other, shall be considered properly and sufficiently specified and will be part to the work.

1.4 **EXAMINATION OF SITE**

.1 Examine existing building and site immediately prior to commencing Work to confirm that building and site as received by the Contractor, including adjoining Municipal lands, conform to information on tender documents.

.2 Notify Consultant immediately if site conditions are not acceptable. Commencement of the Work of this Contract will be taken as acceptance of site conditions. No extras will be considered unless accepted in advance of performance of the work, in writing, by Owner and Consultant.

.3 Contractor must make himself familiar with conditions on the roadway which may affect construction ie location of services, road widening, site access, etc.

1.5 **ACCEPTANCE OF WORK IN PLACE**

.1 Before starting his work and from time to time as the work progresses, each subcontractor shall examine the work and materials installed by the other subcontractors insofar as it affects his own work, and shall promptly notify the Consultant IN WRITING, if any condition exists that will prevent him from giving a satisfactory result in his own work.

.2 Should the subcontractor start his own work without such notification, it shall be construed as an acceptance by him of all preceding work and as a waiver of all claims or questions as to its suitability for receiving his work.

.3 All Subcontractors installing building finishes and site work shall submit written confirmation of acceptance of existing conditions, to the Consultant, prior to commencing their work. Finishing work and landscaping work may not commence without submission of this confirmation. Receipt of this confirmation will be considered a prerequisite for certification of payment to the relevant Subcontractors.

1.6 **MATERIALS AND WORKMANSHIP**

.1 All materials shall be new and the best of their respective kinds. Where a specific grade or brand is not indicated preference shall be given to materials of Canadian manufacture. Pre-packaged materials shall be delivered and stored in unopened containers.

.2 All work performed under this Contract shall be done by mechanics skilled in their respective trades. They shall make use of such templates, jigs or special tools as may be required for the operation involved.

.3 The Contractor is responsible for maintaining quality of workmanship. He shall report to the Consultant whenever the Work or material of any trade does not meet the required standard.

.4 The acceptance of any materials or workmanship shall not be a bar to their subsequent rejection, if found defective.

.5 Rejected materials and workmanship, and any work which is found defective, shall be removed and replaced or made good by the Contractor without cost to the Owner and to the satisfaction of the Consultant.

.6 Adequate, dry storage facilities shall be provided and all stored materials shall be protected from damage and theft.

.7 Perform Work in accordance with the best industry practice of the type of work specified, unless the Contract Documents stipulate more precise requirements, in which case, the more precise requirements shall govern.

.8 Do Work in a neat, plumb & square manner. Ensure that various work components are properly installed, forming tight joints and appropriately aligned junctions, edges and surfaces, free of warps, twists, waves, or other such irregularities.

.9 Wherever indicated on the drawings or specifications, or in the manufacturers'/ suppliers' written instructions, arrange to have manufacturers'/installer's representatives inspect the Work which incorporates their materials, products or items.

.10 Do not permit materials to come in contact with other materials such conditions may result in corrosion, staining, discolouration or deterioration of the completed Work. Provide compatible, durable separators where such contact is unavoidable.

.11 Where equipment or elements (i.e. ladders) are supported by the walls or structure, shop drawings must be stamped by an Ontario Registered Professional Engineer confirming that the wall/structure is capable of supporting the equipment/element and that the anchorage provided is adequate to support the equipment/element together with any potential load or stress.

.12 The design of the Work is based on the full interaction of its component parts. No provisions have been made for conditions occurring during construction. Ensure that no part of the Work is subjected to a load which will endanger its safety or which might cause permanent deformation.

.13 Conceal pipes, ducts, conduit, wiring and other such items requiring concealment preferably in, wall or ceiling construction of all finished areas. If in doubt as to method of concealment, or intent of the Contract Documents in this regard, request clarification from the Consultant before proceeding with the Work.

.14 Lay out mechanical and electrical work well in advance of concrete placement and furring installation to allow for proper concealment. Test and inspect Work before applying pipe covering and before it is concealed.

.15 Provide and maintain control lines and levels required for the Work. Lay out the Work in accordance with these lines and levels and dimensions indicated on the drawings.

.16 Verify lines, levels and dimensions and report any errors or inconsistencies on the drawings to the Consultants.

.17 Final responsibility of satisfactory completion of all the Work, however, lies with the Contractor.

1.7 **SECURITY**

.1 The Contractor shall be responsible for security of all areas affected by the Work of this Contract until taken over by the Owner. Steps shall be taken to prevent entry to the Work by unauthorized persons and to guard against theft, fire and damage by any cause.

1.8 **SCAFFOLDING**

.1 All necessary scaffolding shall be provided and constructed according to by-law and safety regulations.

.2 Construct and maintain scaffolding in rigid, secure and safe manner.

.3 Erect scaffolding independent of building walls.

.4 Avoid interference with other trades.

.5 Move when not in use to permit installation of other work and promptly remove when no longer required.

.6 The provision of scaffolding shall be a matter of agreement between the Contractor and Subcontractors.

1.9 **PROTECTION OF OTHER WORK**

.1 Each trade shall avoid damage to other trades and shall take all measures necessary and provide all masking and materials necessary to provide adequate protection.

.2 Each Contractor and Subcontractor shall be held responsible for all damage to work installed by others that is caused by this work or by anyone employed by him.

.3 Patching and repairing of damaged work shall be done by the contractor who installed the work, as directed by the Consultant, but the cost of same shall be paid for by the contractor who is responsible for the damage.

1.10 **FASTENINGS**

.1 All fastenings must be permanent, of same metal or compatible with any metals with which they are in contact, of adequate size and spacing to ensure permanent anchorage against load or shear.

.2 Exposed fastenings must be evenly spaced, neatly laid out and must not mar surfaces of prefinished materials.

.3 No ram setting or similar techniques will be permitted without prior written approval of the Consultant.

.4 No wood plugs and no anchorages which cause spalling or cracking will be accepted.

.5 Generally use plain washers. Where vibration may occur, use lock type washers and where fasteners are stainless steel use resilient washers.

.6 All fasteners exposed on the exterior must be stainless steel.

1.11 **SUPPLY AND INSTALL**

.1 Unless specifically noted "supply only", any reference to supply intends the supply and installation of material or item so noted.

1.12 **OCCUPATION BEFORE COMPLETION**

.1 If the Contractor, for any reason, does not have the job completed by the completion date and the Owner, of necessity, is forced to occupy any part of the building before the whole of the work is completed, the Contractor will not be entitled to any indemnity for interference with his operation.

1.13 **GENERAL REQUIREMENTS**

.1 All Subcontractors shall examine carefully all drawings and specifications to inform themselves fully of all conditions and limitations pertaining to the work of the contract.

.2 All Subcontractors shall co-operate and co-ordinate their work for the proper completion of the work, including co-ordination of delivery dates and commencement of sub-trades work.

.3 The responsibility for all work, including temporary structures, shoring and erection shall at all times rest with the Contractor and his Subcontractors. The Consultant will review construction methods and shop drawings for general arrangements only. The method of obtaining the results contemplated by the Contract Documents shall be determined by the Contractor.

.4 The undertaking of periodic site review by the Consultant or Owner's representative shall not be construed as supervision of actual construction, nor make him responsible for providing a safe place for work, visit, use, access, travel, or occupancy of their employees or agents.

.5 The Contractor shall be fully responsible for co-ordinating and expediting the work of all Subcontractors and shall employ the necessary and qualified personnel to provide the required quality of labour and materials and to prevent delays in the progress of the project. Each trade shall be afforded all reasonable opportunities for the installation of its work and for the storage and handling of its materials.

1.14 **COORDINATION**

.1 Coordinate all work and preparation on which subsequent work depends to facilitate mutual progress, and to prevent any conflict.

.2 Review all drawings to identify interference issues prior to commencing construction. Request and review interference drawings from all mechanical and electrical trades. Review all shop drawings, samples, product data, mock-ups, and other required submittals for potential interference issues and co-ordinate with the trades to avoid these conflicts.

.3 Where interference issues arise during construction, correct work at no expense to the Owner where the interference could have reasonably been foreseen.

.4 Ensure that each trade makes known, for the information of the Contractor and other trades, the environmental and surface conditions required for the execution of its work; and that each trade makes known the sequence of others' work required for installation of its work.

.5 Ensure that each trade, before commencing work, knows requirements for subsequent work and that each trade is assisted in the execution of its preparatory work by trades whose work depends upon it.

.6 Mechanical and electrical trades in particular, shall ensure that items, such as electrical panels, outlets, diffusers, switches, etc., are located where they will not interfere with the installation or operation of other items.

.1 Check all drawings for the location of items to be installed later, such as millwork, and other wall or ceiling mounted items.

.2 Ensure items installed do not interfere with the operation of equipment or fittings, such as the swinging of doors, etc.

.7 Review all shop and layout drawings, templates, and other required submittals for coordination purposes.

.1 Ensure that all information necessary for the location and installation of materials, openings, inserts, anchors, accessories, fastenings, connections and access panels are provided by each trade whose work requires co-operative location and installation by other trades and that such information is communicated to the applicable installer.

.2 Ensure that shop drawings for aluminum and hollow metal work are coordinated with the openings for doors, frames and windows; site measurements must be indicated on the drawings.

.3 Review millwork shop drawings to ensure adequate clearance from walls, doors, windows, writing boards, mechanical and electrical equipment, etc.

.8 Deliver materials supplied by one trade to be installed by another well before the installation begins.

.9 Trades giving installation information in error, or too late to incorporate in the work, shall be responsible for any extra work caused thereby.

.10 Immediately remove any work which is unsatisfactory for subsequent work, as directed by the Consultant or by the appointed inspection firms.

.11 Inform Commissioning Agent of all equipment installations and start ups.

1.15 **ACCESS TO THE PROJECT**

.1 The Contractor for this work shall at all times allow the Owner or any other contractor or their employees in the building or around the premises, undisturbed, whether union or non-union, as may be required in the execution of other portions of the building work and installation of equipment, etc.

.2 Cooperate fully with forces carrying out any work on behalf of the Owner.

## 1.16 SUB-TRADE AWARDS

.1 The Contractor shall, on notice of award of the contract, obtain the Consultant's approval of a complete list of all persons or firms to which he proposes to sublet any part of the work, the trades or divisions of work which are to be sublet to each, and the amount of each trade. He shall provide to the Consultant a financial breakdown showing all divisions of the work amounting to the full sum of the contract.

## 1.17 SAFETY DATA SHEETS

.1 The Contractor shall submit material and safety data sheets prior to commencing installation and application of at least the following:

.1 lead-free solder
.2 sealants and caulking
.3 resilient flooring
.4 painting and finishing
.5 fertilizers
.6 pesticides
.7 herbicides
.8 all adhesives
.9 any other product which may give off air borne particles after installation

.2 The Contractor and all of his Subcontractors must note that specifically, Asbestos and Asbestos containing materials, solder for piping containing lead, and Painting & Coatings containing lead and/or mercury must be excluded from any part of the Work.

.3 The Contractor must submit Certificates of Compliance, prior to the application for Substantial performance, for each of the following items:

.1 An affidavit relative to the use of Lead-free solder for all domestic water lines, regardless of location.
.2 Products for which Material Safety Data Sheets have been submitted and accepted.
.3 Other Work/Products identified in the Contract Documents as requiring a Certificate of Compliance.

.4 Each Certificate of Compliance must indicate names and addresses of the project, the Owner, the date of Issue, produce description including name, number, manufacturer, with a statement verifying that the Work/Product installed meets specified requirements and, if applicable, complies with the submitted and accepted Material Safety Data Sheets.

.5 Each Certificate of Compliance must be issued on the trade's letterhead, properly executed, under whose work the respective Work/Product has been provided.

.6 Each Certificate of Compliance must be endorsed by the Contractor with his authorized stamp/signature.

.7 The Contractor must ensure that submissions are made to allow sufficient time for review without delaying progress of scheduled completion.

.8 WHMIS Material Safety Data Sheets (MSDS) are required to be provided before or with the first delivery of every controlled product.

.9 Ensure that worksite copies of MSDS's are available to workers wishing to consult them and to the health and safety representative and/or joint health and safety committee.

.10 Ensure that workers are instructed in the purpose and content of MSDS.

.11 Provide prescribed information on any workplace controlled product, including confidential business information, to a doctor or nurse who needs it for diagnosis or emergency medical treatment.

.12 WHMIS MSDS sheets to be kept on site at all times.

1.18 **REGULATING DOCUMENTS**

.1 Refer to Section 01 41 00, Regulatory Requirements. Conform to applicable Codes and Building By-Laws. Conform to the requirements of the authorities having jurisdiction, such as public utilities. Where required under The Occupational Health and Safety Act, engage a Professional Engineer to design formwork and falsework for concrete.

.2 Provide copies of documents referred to in the Specification for joint use of Contractor and Consultant, on site.

1.19 **CONTRACTOR'S RESPONSIBILTY**

.1 The Contractor will be responsible to take all necessary steps to protect personnel (workers, visitors, general public, etc.) and property from any harm during the course of the contract. The list of Contractor's responsibilities identified below is by no means comprehensive, nor is it in any priority or critical order. It is here, merely to identify the most often forgotten or ignored responsibilities of the Contractor and is reproduced only as a reminder. The Consultants and the Owner advise the Contractor that it is he who is responsible for all aspects and facets of the Project, from start to completion, from compliance with Occupational Health and Safety regulations to compliance with all codes and statutes.

.2 The Owner may perform periodic monitoring 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 removed from the site.

.3 All work procedures and equipment shall be in accordance with Owner and Legislation standards.

.4 All equipment shall be in safe operating condition and appropriate to the task.

.5 Only competent personnel will be permitted on site. During the site introduction, the Owner will determine who is competent. The Contractor will cause to remove from the site any persons not observing or complying with safety requirements.

.6 The Contractor shall comply with all Federal, Provincial and Municipal Safety Codes and Regulations and the Occupational Health and Safety Act. He shall insure that all of his Subcontractors, suppliers, installers, etc. comply with all applicable codes, regulations, and acts.

.7 The Contractor shall supply competent personnel to implement his safety program and ensure that the Owner's standards, and those of the Occupational Health and Safety Act, are being complied with.

.8 The Owner may hire Commissioning Agents to perform inspections of building systems at the closing stages of the work of this contract. The Contractor shall cooperate with and coordinate the work of the Owner's Commissioning Agent on site.

.9 The Contractor shall report to the Owner and jurisdictional authorities any accident or incident involving personnel and/or property of the Contractor, Owner, or Public, arising from the Contractor's or any of his Subcontractors, execution of the work.

.10 Provide the Owner with a copy of each site visit report by the Ministry of Labour, as soon as the report is issued.

.11 The Contractor shall include all provisions of this contract in any agreement with Subcontractors, and hold all subcontractors equally responsible for safe work performance.

.12 If the Contractor is responsible for a delay in the progress of the work due to an infraction of legislation or Owner Health and Safety requirements, the Contractor will, without additional cost to the Owner, work such overtime, and acquire and use for the execution of the work such additional labour and equipment as to be necessary, in the opinion of the Owner's Representative, to avoid delay in the final completion of the work or any operations thereof.

1.20 **MANUFACTURER'S INSTRUCTIONS**

.1 Unless otherwise specified, comply with manufacturer's latest printed instructions for materials and installation methods.

.2 Notify Consultant in writing of any conflict between these specifications and manufacturer's instructions. Consultant will clarify any such conflict when requested.

1.21 **AIR, VAPOUR, AND THERMAL SEAL**

.1 Ensure that exterior walls, windows, floor and roof surfaces provide an air-tight and vapour-tight membrane to prevent problems due to building vapour migration.

.2 In general, the air/vapour barrier must be achieved on the interior side of the thermal insulation.

.3 The air barrier/vapour retarder membrane, together with flashings and caulking shall provide a complete and continuous air barrier/vapour retardant envelope. All trades must co-ordinate their work with the work of other trades to ensure that the continuity and integrity of the envelope is maintained.

.4 The Owner may require infra red thermal scans of the completed building faces to establish air leakage and thermal deficiencies. Scans will be done by an independent testing agency and paid for out of the Cash Allowances. In the event that the continuity of the exterior envelope has not been maintained the affected areas shall be rectified at no cost to the Owner.

1.22 **SAFETY REQUIREMENTS**

.1 Comply with safety requirements outlined in Section 01 35 20.

1.23 **TRUCKING COSTS**

.1 The Contractor is responsible for all costs related to trucking required for the Contract. No extra costs will be considered for weight load or limits due to seasonal conditions or restrictions on load capacities imposed by any authorities or any similar limitations or factors.

1.24 **WARRANTIES**

.1 The following is a summary of the warranties required by the contract:

| | # Years |
|---|---|
| **General Contract** | **1** |
| Concrete Floors, Concrete Slabs-on-grade | 3 |
| Stack Jack Flashing | 20 |
| Roofing and Sheet Metal | 10 |
| Caulking and Sealants | 2 |
| Hollow Metal Doors, Frames and Screens | 3 |
| Finish Hardware | 3 |
| Panic Devices and Door Closers | 5 |
| Glass and Glazing | 10 |
| Fore Rated Glass | 5 |
| Acoustic Ceilings | 2 |
| Ceramic Tile | 3 |
| Painting | 2 |
| Marker Boards | 5 |
| Tackboards | 2 |

.2 Additional warranties may be noted within the specification sections.

1.25 **ADDITIONAL DRAWINGS**

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

1.26 **QUALITY CONTROL**

.1 The Consultants and authorized Owner staff shall have access to all areas of the Work, including any off site construction facilities.

.2 The Contractor shall give timely notice requesting inspection if Work is designated for special tests, inspections, or approvals by the Consultants, or any other authorized Owner staff, or testing and inspection company.

.3 If the Contractor covers, or permits to be covered Work that has been designated as outlined above, he shall uncover such work, have the inspections and tests satisfactorily completed and make good such work at no additional cost to the Owner.

.4 The Consultants or the authorized Owner Staff may order any part of the Work to be examined, if such Work is suspected not to be according to the Contract Documents. If, upon examination, such work is found not to be in accordance with the Contract Documents, then the Contractor shall correct such Work and pay for cost of examinations and correction. If such Work is found to be in full accordance with the Contract Documents, the Owner shall pay for the cost of examination and making good.

.5 If defects are revealed during inspection and/or testing, the appointed agency may request additional inspection and/or testing to ascertain the full degree of defects. The Contractor shall correct the defects and irregularities as reported by the inspection and/or testing agency, at no additional cost to the Owner and the Contractor shall pay all associated costs for retesting and reinspection.

.6 The Contractor shall provide any tools, materials or equipment that may be required by the inspection and/or testing agencies in retesting the Work. (E.g. Video camera rental to reinspect incorrectly installed sewer lines.)

.7 The employment of inspection and/or testing agencies does not, in any way, affect the Contractor's responsibility to perform the Work in strict accordance with the Contract Documents.

.8 The Contractor shall remove all defective work, whether the result of poor workmanship by him or his subtrades, use of defective or damaged products, whether or not incorporated into the Work and any Work that has been rejected by the Consultants or authorized Owner Staff as failing to conform to the Contract Documents. Replacement and execution of the affected Work shall be done in full accordance with the Contract Documents, making good other trades' work damaged by such removals or replacements at no additional charge to the Owner.

.9 If, in the opinion of the Consultant and/or the authorized Owner Staff, it is not expeditious to correct the defective Work, or Work not performed in accordance with the Contract Documents, the Owner, may, at its sole discretion, deduct from the Contract Price, the difference in value between the work performed and that required by the Contract Documents, the amounts of which shall be determined by the Owner.

.10 The notable exception to the above item is a faulty installation of base and asphalt paving. If, the inspection agency, after performing random test holes to determine compaction and thickness of sub base, base and asphalt, determines that either one or both, are not according to what was specified in the Contract Documents, the Owner will not accept credits for such inconsistencies but rather, demand that any such installation be removed and redone in its entirety, at the convenience of the Owner, but within the first year of the warranty period.

1.27 **ENVIRONMENTAL DESIGN REQUIREMENTS**

.1 Indoor air quality is of major importance in the building. It is the intention of this Contract that the materials and products used be as low as possible in emissions of volatile organic compounds (VOCs). Low or no VOC products shall be used where these are available and suitable for the application. This is particularly of concern with regard to paints and other finishes, adhesives, sealants, and products manufactured using these materials.

.2 Any cleaners, solvents, fuels, aerosol sprays and other chemical products used during construction should also be low VOC emitting where possible. Provide good ventilation when using any products that may emit VOCs.

1.28 **START-UP**

.1 Administrative work shall commence immediately upon receipt of Letter of Intent from Owner, and Contractors submission of start-up documents and insurance.

.2 Demolition work may start once the school is vacant for the summer vacation.

.3 New work cannot commence without a building permit.

1.29 **PAYMENT PROCEDURES**

.1 Refer to CCDC2 2008, Stipulated Price Contract, Part 5, Payment, and amendments included the Supplementary Conditions.

.2 Before submitting first request for payment, submit a Schedule of Values, which shall be a detailed breakdown of the Contract price, as directed by the Consultant and as per the Owner's format. Breakdown must equal Contract price. After approval by Consultant, cost breakdown will be used as basis for progress payments.

.3 Notwithstanding the amounts indicated on the Schedule of Values for the various aspects of the Work, the Owner reserves the right to retain additional funds for some items, where listed in the specifications. This includes amounts to be retained for maintenance manuals and for commissioning, as outlined in the applicable specification sections.

.4 Applications for payment shall list HST separately.

1.30 **REQUESTS FOR SUBSTITUTIONS**

.1 Products, materials, equipment, and methods of construction included in the Contract Documents are to be used in the execution of the Work of this Contract unless otherwise accepted by the Consultant in writing. Substitute products and materials may not be ordered or installed without written acceptance from the Consultant.

.2 Changes proposed by the Contractor are considered requests for “Substitutions”. Requests for Substitutions are to be submitted only by the Contractor.

.3 Submit a complete package, including information and documentation outlined below, for evaluation by the Consultant.

.4 A Request for Substitution must include the following information:
- .1 Data sheets for both the specified item and the proposed substitution, enabling side by side comparisons.
- .2 Complete description of the proposed alternative product or material, including:
  - .1 Laboratory tests results
  - .2 dimensions, gauges, weights, etc.
- .3 An explanation of how the proposed substitute differs from the specified product
  - .1 in physical properties
  - .2 in quality and performance
- .4 A list of any effects the proposed substitution would have
  - .1 on service connections (wiring, piping, ductwork, etc.)
  - .2 on the work of other trades
  - .3 on construction Schedules
- .5 Evidence that manufacturers warranties and guarantees for the proposed substitutes are the same, or exceed those required under the Contract.
- .6 Information on the availability of maintenance services and replacement materials for proposed substitute.
- .7 Names, addresses, and phone numbers of fabricators and suppliers for proposed substitute(s).
- .8 Confirmation that the proposed substitution, if accepted, would have no cost impact, or indication of a credit (or extra cost) associated with the substitution.

.5 Submissions of Requests for Substitution must be received by the Consultant well prior to any shop drawing submissions. The Shop Drawing process is not an acceptable means of requesting a substitution, and submission of drawings for products that have not been accepted will result in the automatic rejection of the Shop Drawing submission.

.6 The burden of proof of the merit of the proposed substitution lies with the Contractor.

.7 Substitution requests deemed incomplete or incorrect by the Consultant will be rejected.

.8 The Consultant may require the submission of further information in order to make an informed determination on the suitability of the proposed substitution. Allow a minimum of 10 working days, upon receipt of all required information, for the Consultant’s decision. Substitutions requested too late, not allowing sufficient time for thorough review by the Consultant, will be rejected.

.9 The Owner's decision, based upon recommendations of the Consultant, of acceptance or rejection, of a proposed substitution shall be final.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 GENERAL PROCEDURES

.1 Changes in the Work ordered by the Consultant in accordance with the General Conditions of the Stipulated Price Contract shall be valued in accordance with the General and Supplementary Conditions of the Stipulated Price Contract and as more fully specified herein.

.2 The standard documentation for effecting changes in the Work shall be as follows:

.1 Consultant's Notice of Change issued to the Contractor on standard form and accompanied by necessary Drawings, Schedule, Details and Specifications.

.2 Contractor's Quotation submitted to the Consultant showing amount by which the Contract Sum shall be adjusted by way of increase or decrease if the change is ordered.

.3 Consultant's formal Change Order issued to the Contractor on Standard Form after Owner's approval. Formal Change Order becomes valid when signed by Consultant, Contractor, and Owner.

.3 Standard form of Notice of Change and Change Order may be viewed at the Consultant's office during normal working hours.

### 1.2 VALUATION OF CHANGES

.1 Quotations submitted by the Contractor in response to Consultant's Notice of Change shall be fully detailed and itemized to facilitate checking and processing by the Consultant. Quotations shall be submitted in triplicate and shall:

.1 List Work proposed to be carried out by Contractor's Own Forces showing labour, material, plant and equipment charges together with quantities and costs (unit rates if applicable) in the assessment of such charges.

.2 List Work proposed to be carried out by Subcontractors showing the amount quoted by each Subcontractor as verified by the Subcontractor's quotation which shall show labour, material, plant and equipment charges together with quantities and costs (unit rates if applicable) upon which the quotation is based.

.3 In evaluating a change, the net cost shall be the net difference in quantity between the original and revised Work. For example: If the change affects the omission of $3m^3$ and the addition of $4m^3$ of an item, the value of the change will be assessed by applying the net difference of $1m^3$ (extra) and applying the appropriate mark-up specified herein.

.2 Unit rates are only applicable if they have been accepted by the Owner in advance and included in the Contract.

.3 Where unit rates are not established in the Contract, quote costs as follows:

.1 material prices shall be the net price paid by the Contractor (or Subcontractor) after deduction of all trade discounts and the like other than reasonable discount for prompt payment.

.2 plant and equipment costs shall not be more than rates quoted in the latest edition of "Rental Rates on Contractor's Equipment" published by the Canadian Construction Association.

.3 labour costs shall be the actual rate paid to the workers in accordance with the fair wage provision of the Contract plus a “fair wage burden” mark-up of thirty-eight percent to cover Welfare contribution, Pension contribution, Vacation Pay, Trade Improvement Fund, Promotional Fund, Training Fund, Supplementary Unemployment Benefits, Check Off, Apprenticeship, Trust Fund and similar labour contract payments; Worker's Compensation Insurance, Canada Pension Scheme and other statutory charges on labour..

.4 Unless otherwise specified in the Form of Tender, unit rates quoted in Tender and incorporated in the Contract shall include the “fair wage burden” for labour as specified in paragraph 1.2.3.3 hereof, but shall be exclusive of mark-up for overhead and profit.

.5 Where Contract unit rates (if applicable) are to be modified:

.1 Where a change involves an extra/credit of more than $10,000.00 (using Contract unit rates), a new unit rate must be negotiated to reflect a fair rate considering the volume of work involved.

.6 “Overhead” shall be as defined under the Supplementary Conditions of the Contract and shall include all expenses to carry on work, except items included in the cost as defined above, and shall include but not be limited to: use of Plant, tools, supervisory staff, bonds, and insurance.

.7 Refer to the Supplementary Conditions of the Contract, included in Division 00, for maximum mark-ups permitted for overhead and profit . Mark-ups for overhead and profit may be applied, as appropriate, to the net costs assessed as above where the effect of the proposed change is an increase in the Contract Sum. If the effect of the change is a decrease in the Contract Sum no mark-up shall be applied.

.8 When work deleted from the Contract is later added back into the Contract, additional overhead and profit will not apply to the reinstated work. Overhead and profit amounts are not included in credits and so remain included in the Contract amount.

.9 It shall be understood and agreed that the mark-ups specified above shall be deemed to provide for payment in full for all items that in the custom of the Construction Industry in Ontario are considered to be site or head office overhead, profit, supervision, administration and labour costs.

.10 Claims for extras will not be considered unless they can be verified by the Consultant. Site work, excavation, backfill, footings and all below grade work must be visually inspected by the Consultant and documented by an independent third party (ie Surveyor) BEFORE the work is hidden.

.11 The signing of a Change Order by all parties shall be deemed to be formal acceptance by the Owner of the Contractor's quotation. Following the issue of a Change Order the Owner will not entertain claims for extra payments due to errors alleged to have been made in the Contractor's Quotation.

.12 Under no circumstances will a claim for extra be considered if it is for work recommended by the Inspection Company unless the Consultant has been advised and his approval obtained PRIOR TO THE EXECUTION OF THE WORK.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 SITE SUPERVISOR

.1 The Contractor shall be fully responsible for co-ordinating and expediting the work of all Subcontractors and shall employ a qualified Site Supervisor who shall be in full time attendance on this project.

.2 Prior to the Preconstruction Meeting, the Contractor shall inform the Consultant of their choice for Site Supervisor and shall provide their resume outlining qualifications and related work experiences.

.3 The Supervisor must have held the Supervisors position previously on the site of a school project of at least four million dollars in value. The Supervisor shall also have recent, previous experience with renovation or addition projects involving occupied buildings including (but not limited to) school construction, sites with students, tenants, employees, retail customers, pedestrian and vehicular traffic.

.4 The Supervisor must be assigned to projects for the duration of the construction period, until the buildings are fully occupied by the Owner.

.5 The Owner and the Consultant reserve the right to reject the proposed Supervisors should they feel that they are not fully qualified to assume the responsibilities of the positions.

.6 There shall be a minimum of one full time Site Supervisor dedicated to the site.

.7 Site Supervisor must carry a cell phone at all times during construction with the ability to be reached directly during all work hours and the ability to have voicemail recorded during all non-work hours including weekends and holidays.

.8 Once the Supervisors are confirmed, there will be no change permitted without the written consent of the Consultant.

### 1.2 CONSULTANT/CONTRACTOR MEETING

.1 Prior to the commencement of the Work, the Contractor together with the Consultant shall mutually agree to a sequence for holding regular "site meetings" on same day (to be determined) of every second week.

### 1.3 PRE-CONSTRUCTION MEETING

.1 Immediately prior to construction, upon notification, attend at location of Owner's choice, pre-construction meeting, along with authoritative representatives of certain key Subcontractors as specifically requested by the Consultant.

.2 Purpose of meeting is as follows:
- .1 Review project communications procedures.
- .2 Review contract administration requirements including submittals, payment and change order procedures.
- .3 Identify all critical points on Construction Schedule for positive action.

.4 Identify any product availability problems and substitution requests.
.5 Establish site arrangements and temporary facilities.
.6 Review any items which, in the Board's, Consultant's and Contractor's opinion, require clarification.
.7 Exchange names & addresses of all key personnel representing Owner, Consultant, Contractor and Subcontractors.
.8 Identify Consultant's inspection requirements.

1.4 **PROJECT MEETINGS**

.1 Consultant shall Chair project meetings on Site, on a regular basis and will issue minutes to Owner's Representative, Consultants, and Contractor.

.2 Consultant shall take minutes of meeting showing:
.1 List of persons attending.
.2 Decisions taken.
.3 Instructions required or issued - Allocating responsibilities to action items.
.4 All matters discussed.
.5 Schedule Update - Progress, Delays.

.3 Contractor shall provide suitable on site accommodation for meeting, attend all meetings, arrange for attendance of all necessary Subcontractors, and distribute minutes of previous meeting to Subcontractors and Suppliers as appropriate.

.4 The Contractor's representatives at site meetings must include the project co-ordinator as well as site Supervisor.

.5 Contractor shall hold regular co-ordination meeting with Subcontractors and shall chair and minute each meeting. Copies of minutes shall be distributed to relevant Trades and Consultants and Owner.

.6 In addition to jobsite meetings, Contractor shall arrange for, chair, and record safety meetings and regular meetings with his Subcontractors and suppliers. He shall distribute copies of the minutes of these meetings to all Subcontractors, Owner and Consultant.

1.5 **ON SITE DOCUMENTS**

.1 The Contractor shall maintain the following documents, up to date, in the site office:

.1 Contract Documents
.2 Reviewed Shop Drawings - Printed in full colour or redline
.3 All instructions and changes, i.e. Work Authorization, Jobsite Instructions, Notices of Contemplated Change, Change Orders, etc.
.4 All inspection and test reports
.5 Permit drawings and specifications
.6 Authorizations, approval documents, permits, special rulings, etc., issued for the project by Authorities Having Jurisdiction.
.7 Details of tested assemblies being used on the project; ULC, cUL, etc.
.8 As-Built drawings.

.2 Confirm with building inspector, at the commencement of construction, what documents are required for submission both during construction and for occupancy. Keep copies of such documents on site. Refer also to Section 01 41 00, Regulatory Requirements.

.3 Documents listed above shall be printed, full size documents, not only digit format.

.4 Maintain copies of Regulating Documents referred to in the specifications, up to date, in the site office.

.5 Maintain a file of Material Safety Data Sheets (MSDS) for all materials being used on site and make available to all concerned, in the site office.

**END OF SECTION**

## 2PART 1 - GENERAL

### 1.1 SCHEDULE

.1 Within thirty (30) days of contract award, submit a detailed construction schedule. Base the submission on the commencement of completion dates of the Contract and indicate specified restraints and milestones, activities and durations for shop drawing submission and approval, testing, fabrication and delivery, construction sequence and timing, interdependencies and constraints. Include the procurement activities for major structural elements, cladding, windows, and mechanical and electrical equipment. Ensure the participation of all major Subcontractors and Suppliers. Schedule must include reasonably detailed breakdown of mechanical, and electrical work.

.2 Schedule shall show:

.1 Commencement and completion dates of Contract.

.2 Commencement and completion dates of stipulated stages if any.

.3 Commencement and completion dates of Trades.

.4 Order and delivery times for materials and equipment, where possible.

.5 Dates for submission of Shop Drawings, material lists and samples.

.6 Any other information relating to the orderly progress of Contract, considered by Contractor to be pertinent.

.3 The schedule shall be reviewed and updated at every Site meeting.

.4 Include with each update a written report of activity progress reflected in the revised Schedule, and the corrective actions which have been made or are to be taken to maintain progress on the schedule in the future, anticipated delays, resources availability, schedule changes, and work to be completed in the next 2 month period.

### 1.2 UPDATING AND MONITORING

.1 Set up format of Construction Schedule to allow plotting of actual progress against scheduled progress.
.1 Allow sufficient space for modifications and revisions to the Schedule as Work progresses.
.2 Format shall be approved by the Consultant.

.2 Display copy of Schedule in Site office during complete construction period and plot actual progress weekly.

.3 Updating:

.1 Arrange participation, on Site and off Site, with Subcontractors and Suppliers, as and when necessary for the purpose of updating schedule and monitoring progress.

.2 Conduct reviews of progress and update schedule, distributing copies to Consultant, Owner and Sub-Trades at least once a month or as directed by Consultant.

## 1.3 PROGRESS REPORTS

.1 Keep a permanent written report on the Site of progress of the Work. This record to be open to review by the Consultant. A copy to be furnished to the Consultant upon request.

.2 Indicate daily the number of persons engaged on the work (including subtrades) and the division and section of the work upon which each group of workers is engaged, in sufficient detail to record dates of construction of each particular section of work.

.3 Record to show dates of commencement and completion of trades and parts of the work coming under the Contract, including reports on daily weather conditions, excavation work, erection and removal or forms, and other similar pertinent information.

.4 Report delays (and potential delays) giving reason for delay and action being taken to resolve the problem.

## 1.4 PROGRESS PHOTOGRAPHS

.1 Concurrently with monthly application for payment, submit 10 electronic format colour images as follows:

.1 Images shall clearly show overall progress of Work.

.2 Images shall be properly exposed and in focus; views shall be unobstructed. The Consultants will not accept images which are, in their opinion, substandard and these shall be retaken and resubmitted.

.3 Provide an index with printed images clearly identified with name of project, description of view and date taken. Disks are to be clearly labelled .

## 1.5 QUALITY OF WORK / STATUS REPORTS

.1 The Contractor shall take full responsibility for the quality of work on site. The Contractor shall furthermore notify workers of deficient work immediately upon receipt of notification of deficiencies by the Consultant, Subconsultants and/or Owner.

.2 The Contractor shall provide a monthly status report on the status of deficiencies identified by the Consultant and Subconsultants. The report shall include a description of each deficiency, status of the deficiency, description of corrective action taken, value (cost) to the correct deficiency and trade (person) responsible for deficiency. The report shall be typewritten on the Contractors letterhead. A copy of the report format shall be submitted at least 2 weeks prior to the first progress draw, for review. Submit monthly status reports with each progress draw.

.3 After Substantial Performance, the Contractor shall continue provide the deficiency status reports on a monthly basis, including updated lists of deficiencies identified by the Owner and consultants.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 BEFORE COMMENCEMENT OF WORK

.1 Obtain the documents listed under this heading and supply to Consultant within the time stipulated in the Specification, or if not so stipulated, before issue of the first Certificate.

.1 Performance Bond/Labour and Material Bond.

.2 Insurance Policies required under General Conditions of Contract - Insurance.

.3 Certificates of good standing from the Workplace Safety & Insurance Board for the Contractor and all Subcontractors.

.4 Shop Drawing Schedule.

.5 Permits required for work of Mechanical Trades and Electrical Trades.

.6 Permits for temporary structures, hoists, etc.

.7 Schedule of Values: Refer to General Conditions of Contract.

.8 Estimate of monthly progress claims (cash flow schedule).

.9 Construction Schedule.

.10 Equipment Delivery Schedule.

.2 Concurrently, with schedule of values, submit cash flow schedule broken down on a monthly basis, indicating anticipated monthly progress billings for duration of the Contract.

.3 Submit schedule in a format acceptable to the Consultant. Indicate anticipated submission dates and review periods. Highlight critical items.

.4 Submit, in a format acceptable to the Consultant, a list of manufactured equipment complete with order dates, anticipated delivery dates, and dates required on site to meet progress schedule. Update schedule at least once a month or more often if directed by the Consultant. Clearly indicate late deliveries and anticipated impact on construction schedule. Include in schedule required delivery dates for products supplied by Owner.

.5 Schedule of Values:

.1 Before submitting first request for payment, submit a detailed breakdown of the Contract price, as directed by the Consultant and as per the Owner's format. Breakdown must equal Contract price. After approval by Consultant, cost breakdown will be used as basis for progress payments.

1.2 **DOCUMENTS AND ACTION REQUIRED DURING PROGRESS OF CONTRACT**

.1 Perform the action and/or obtain the documents listed under this heading and supply to the Consultant, within the time stipulated in the Specification or, if not so stipulated, as soon as possible following Consultant's request.

.2 Submit preconstruction survey, required under Section 01 71 23, Field Engineering.

.3 Adjust Cash Allowances by award of separate Contracts, where appropriate.

.4 Documents specified under Section 01 10 00, General Instructions and Section 01 33 23, Shop Drawings, Product Data and Samples.

.5 Progress photographs, submitted concurrently with monthly application for payment. Refer to Section 01 32 00.

.6 Any permits required from Authorities Having Jurisdiction enabling Owner to occupy the work (or part thereof) prior to Substantial Performance of the Contract.

.7 As-Built Documents:

.1 The Owner requires as-built documents for all architectural, structural, mechanical and electrical changes on completion of the construction.

.2 The Contractor, and mechanical and electrical Subcontractors shall obtain, from the Consultant, a complete and separate set of white prints of Contract Drawings and Project Manual to keep on the site at all times.

.3 The drawing prints shall be marked up by responsible personnel of the Contractor and Subcontractors to record clearly, neatly, accurately and promptly showing all locations of buried structural, mechanical and electrical work and deviations from the contract documents.

.4 The Project Manual shall be similarly marked up to reflect deviations from the Contract Documents, as well as indicate materials used, colours selected, etc.

.5 The accurate location, depth, size and type of each underground utility and service line shall be recorded before concealment to ensure accurately directed future access to these buried lines.

.6 The as-built documents will be reviewed at regular intervals by the Consultant and the quality of performance by the Contractor and Subcontractors in developing these records will be taken into consideration when reviewing the monthly applications for payment submitted by the Contractor.

.7 Prior to the date of Substantial Performance, request from the Consultant updated drawings incorporating all changes made to the building through Change Orders and Jobsite Instructions. Transfer all recordings from the white prints to these updated drawings and return them to the Consultant, as specified in Section 01 78 00, Close-out Submittals.

.8 Mark "as-built" changes in red coloured ink.

.9 Record following information:

.1 Depth of various elements of foundation in relation to first floor level if different from contract documents.

.2 Horizontal and vertical location of underground utilities and appurtenances referenced to permanent surface improvement.

.3 Location of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of structure.

.4 Field changes of dimension and detail.

.5 Changes made by Change Order or Supplementary Instructions.

.10 Clearly mark each of the drawings,"Project As-Built Record Copy".

.11 Final completion of these Drawings shall be a condition precedent to the issuance of Consultant's final payment certificate.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 SCHEDULE

.1 Within 5 working days after award of Contract, prepare and submit to Consultant for comment, a schedule fixing the dates for the submission of all Shop Drawings, product data and samples.

.2 Allow reasonable promptness for Consultant to review submissions, exclusive of time required for inter-office transmissions.

.3 All shop drawings must be reviewed and stamped by the Contractor prior to submission to the Consultant.

### 1.2 GENERAL

.1 Submit to Consultant, for review, Shop Drawings, Product Data, Samples, and other required submittals specified.

.2 All shop drawings and related submittals must be reviewed and stamped by the Contractor prior to submission to the Consultant.

.3 Until submittal is reviewed, Work involving relevant product may not proceed.

.4 Do not use for construction, Shop or setting Drawings or diagrams which do not bear Consultant's stamp and signature.

.5 Shop drawing reviews do not authorize changes in cost or time, which may only be accomplished by an appropriate Change Order issued through the Consultant.

.6 Shop drawings shall be for products as specified or otherwise approved by the Consultant. The shop drawing process is not a means of requesting substitutions. Refer to Section 01 10 00 for the process for requesting approval of substitutions.

.7 Submission and subsequent review of Shop Drawings constitute a service and does not entitle the Supplier or Subcontractor to the right to remuneration until the materials are supplied and installed on the Site in accordance with the Contract.

.8 The Contractor must include for delivery and pick up of shop drawings to/from the Consultant by hand or courier.

.9 The Contractor must include for reproduction of submittals after review of same by the consultants.

### 1.3 SHOP DRAWINGS

.1 Drawings shall be copies of original drawings prepared by Contractor, subcontractor, supplier or distributor, for the work of the Contract which illustrate appropriate portions of the Work. Shop drawing submissions shall show pertinent information for incorporation of the products and equipment, including the following, as applicable:

.1 fabrication details

.2 dimensioned layout drawings, including clearances, with site dimensions
.3 relationship to adjacent work
.4 setting or erection details
.5 performance requirements
.6 operating weights of equipment
.7 installation instructions
.8 service connection requirements, including wiring diagrams
.9 single line and schematic diagrams
.10 additional information as may be specified in applicable Specification Sections.

.2 Note that some shop drawings are required to be approved by a Professional Structural Engineer in the Contractor's employ. These include:
.1 structural steel
.2 reinforcing steel
.3 precast concrete
.4 mechanical and electrical equipment - structural supports
.5 and other items as required in the specifications.

.3 Submit Shop Drawings with transmittal forms listing:
.1 the names of the manufacturer, supplier, subcontractor
.2 the applicable Drawing numbers
.3 the number of copies
.4 the names of the items included the submittals
.5 number of Specification section to which the Shop Drawings refer
.6 dates and revision numbers, and submission numbers

.4 All dimensions on shop drawings must be in metric.

.5 Where approvals are required by Authorities having jurisdiction, submit Shop Drawings to those authorities and obtain the approvals required.

.6 On Shop Drawings for fire rated assemblies show required fire rating and ULC design numbers.

.7 Submit shop drawings as follows:

.1 Submissions shall be in sufficient quantities for distribution to all reviewers, plus one copy to be returned to the Contractor for reproduction and distribution.

.2 The prime Consultant requires one copy of every submission, of all disciplines.

.3 Each sub-consultant, of each discipline, will retain one copy of the shop drawings. Where one sub-consultant is responsible for the review of more than one discipline, they will require multiple copies, as applicable.

.4 For architectural submissions which do not need to be reviewed by sub-consultants, only two copies are required.

.5 Refer to sections prepared by the sub-consultants for possible variations on these requirements.

.8 Email Submission:

.1 Submittals that are formatted for 11" x 17" (279 x 432mm) sheets or smaller may be submitted by email, provided the total number of pages, for the entire submission, does not exceed 15.

.2 Submittals must be submitted in the same size and scale as they were originally prepared. Drawings may not be reduced in size for email transmission.

.3 If acceptable to the individual reviewers, larger format submittals and larger volume submittals may be reviewed by email submission. The Contractor must subsequently print and submit full sized, red line copies of such reviewed documents to each reviewer.

.4 Email submissions must be in pdf format and must be high quality documents, preferably generated by computer from the original documents (rather than scans of printed documents). If digital submissions are of insufficient quality, hard copies will be required.

.5 Emailed documents shall be reviewed and stamped digitally by the Contractor, or accompanied by a separate sheet from the Contractor listing the documents reviewed and bearing the Contractor's review stamp, along with copies of any revisions made.

.6 Email submission is only used as a convenient means of distributing drawings, in lieu of sending hard copies by courier. Reviewed drawings must still be printed for job site files, record copies, etc. All site copies shall be red line prints or colour prints.

.9 Drawings shall be of a size and quality which will be readily reproduced. Shop drawings must be certified to have been reviewed and corrected by Contractor and sub-contractor responsible for forwarding to the Consultant.

.10 Shop drawings are to be to scale. Scale shall be large enough to adequately review details included. Provide site measured dimensions on drawings wherever possible.

.11 All requirements for shop drawings apply also to resubmissions of shop drawings, as may be required by the Consultant.

.12 Revise all reviewed shop drawings to incorporate Consultant's comments. One complete set of final, revised Shop Drawings, used for construction, shall be submitted to the Consultant.

.13 Shop Drawings are required for the following items:

Building Layout
Concrete & Masonry Reinforcement
Masonry Anchorage & Reinforcement
Hollow Metal Work
Hardware Schedule and Data
Resilient Flooring
Manufactured Specialties

Other items as may be requested within the specifications

.14 Refer also to the General Conditions of the Contract and the Supplementary Conditions included in Division 00.

1.4 **PRODUCT DATA**

.1 Certain Specification Sections specify that manufacturer's standard schematic drawings, catalogue sheets, diagrams, schedules, performance charts, illustrations and other standard descriptive data will be accepted in lieu of Shop Drawings.

.2 The above will be accepted if they conform to the following:
- .1 Delete information which is not applicable to project.
- .2 Supplement standard information to provide additional information applicable to project.
- .3 Show dimensions and clearances required.
- .4 Show performance characteristics and capacities.
- .5 Indicate operating weight of equipment.
- .6 Show wiring diagrams and controls.
- .7 Add to standard sheet the Project identification data.

1.5 **SAMPLES AND MOCK-UPS**

.1 Where specified, shown or considered necessary, submit duplicate samples for Consultant's approval.

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

.3 Samples must correspond in every respect to materials supplied for project.

.4 Construct field samples and mock-ups at locations acceptable to Consultant.

.5 Construct each sample or mock-up complete, including work of all trades required to finish work.

.6 Do not proceed with fabrication or delivery of materials until samples are approved.

.7 Reviewed samples or mock-ups will become standards of workmanship and material against which installed work will be checked on project.

.8 Approval of samples does not imply acceptance of finished work.

1.6 **CONTRACTOR'S RESPONSIBILITY**

.1 Prior to submission to the Consultant, review all shop drawings, samples, product data, and other required submittals as follows:

- .1 Verify that the submission is for products as specified, or otherwise approved by the Consultant.
- .2 Ensure that the submission is complete.
- .3 Note any potential interference issues and co-ordinate with the trades to avoid these conflicts.

.4 Verify:
.1 Field measurements.
.2 Field construction criteria.
.3 Catalogue numbers and similar data.

.2 Coordinate each submittal with requirements of Work and Contract Documents. Refer to Section 01 10 00, General Instructions, and the subsection on Coordination.

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

.4 Stamp, initial or sign each Drawing, certifying approval of submission, verification of field dimensions and measurements and compliance with Contract Documents, prior to submission to the Consultant(s).

.5 The Contractor shall be responsible for reproducing and distributing reviewed shop drawings, except for those copies required by the Architect and Consultants.

.6 After Consultant's review, distribute copies as follows:

.1 Job Site file (2 copies) - colour or redline copies
.2 As-built documents file.
.3 Other prime contractors.
.4 Subcontractors.
.5 Supplier.
.6 Fabricator.
.7 Authorities having jurisdiction, where required by Codes and/or By-Laws, i.e. structural steel and sprinklers.
.8 Owner’s Maintenance Manual (revised, as-built copies).

.7 Distribute samples as directed by the Consultant.

.8 Ensure that all samples are approved by authorities having jurisdiction, supplier for correct application in Project, and other parties such as Owner in time to permit approval prior to ordering of quantity delivery to Site.

.9 The Contractor shall advise all Trades, Subcontractors and suppliers of the limits of the Consultant's responsibility with respect to Shop Drawings and other submittals, as detailed below.

1.7 **CONSULTANT'S RESPONSIBILITY**

.1 With reasonable promptness from the receipt of samples and Architectural shop drawings , the Consultant shall review them and return them to the Contractor. Allow 15 working days for review of shop drawings.

.2 Review by the Consultant is for the sole purpose of ascertaining conformance with the general design concept. This review shall not mean that the Consultant approves the detail design inherent in the shop drawings, responsibility for which shall remain with the Contractor, and such review shall not relieve the Contractor of his responsibility for errors or omissions in the shop drawings or of his responsibility for meeting all requirements of the Contract Documents. The Contractor is responsible for dimensions to be confirmed and correlated at the job site, for information that pertains solely to the processes or techniques of construction and installation and for co-ordination of the work of all subtrades.

.3 Shop drawing markings shall be interpreted as follows:

.1 Shop drawings marked "REVIEWED" by Consultant and/or Subconsultants are released for construction.

.2 Shop drawings marked "REVIEWED AS NOTED" by the Consultant or his Subconsultants are also released for construction, after revisions noted are made; with final copies sent to the Consultant.

.3 Shop drawings marked "REVISE AND RESUBMIT" by the Consultant or his Subconsultants are NOT released for construction and must be resubmitted after being revised in accordance with the consultants' comments.

.4 Shop Drawings marked with the Consultant's "RECEIVED" stamp only have not been reviewed by the Consultant.

.4 Review by the Architect does not in any way constitute review of the design of engineering elements, which form part of the Contract Document's prepared by others.

.5 Shop drawings for products that are not a specified item, or an approved substitution, will be rejected without being reviewed.

.6 Shop drawings which have not been requested will be returned to the Contractor with no action taken by the Consultant.

.7 The Architect will use the following stamps in reviewing Shop Drawings:

Date:
RECEIVED
MOFFET & DUNCAN ARCHITECTS INC.

"Review by Moffet & Duncan Architects Inc. does not in any way constitute review of the design of engineering elements, which form part of the Contract Documents prepared by others."
MOFFET & DUNCAN ARCHITECTS INC.

| | |
|---|---|
| REVIEWED | ☐ |
| REVIEWED AS NOTED | ☐ |
| REVISE AND RESUBMIT | ☐ |

"This review by Moffet & Duncan Architects is for the sole purpose of ascertaining conformance with the general design concept. This review shall not mean that Moffet & Duncan Architects Inc. approves the detail design inherent in the shop drawings, responsibility for which shall remain with the Contractor submitting same, and such review shall not relieve the Contractor of his responsibility for errors or omissions in the shop drawings or his responsibility for meeting all requirements of the Construction and Contract Documents. The Contractor is responsible for dimensions to be confirmed and correlated at the job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of the work of all sub-trades."

MOFFET & DUNCAN ARCHITECTS INC.

| | |
|---|---|
| REVIEWED BY | |
| DATE | |
| PROJECT No. | |

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 CONSTRUCTION SAFETY

.1 Observe and enforce construction safety measures required by the National Building Code of Canada, Canadian Construction Safety Code, Ontario Occupational Health and Safety Act, Workplace Safety & Insurance board (WSIB) and Municipal Statutes and Authorities.

.1 The Contractor is again reminded that the Contractor is responsible for Occupational Health and Safety on this project. The items listed below are only guidelines of the Owner's expectations in this regard and not to be construed to be comprehensive or total in nature.

.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 event of conflict between any provisions of above authorities the most stringent provisions will apply.

.4 The Owner will take every reasonable precaution to prevent injury or illness to students, employees and the public, participating in Owner activities, or performing their duties. This shall be accomplished by providing and maintaining a safe, healthy working environment and by providing the education necessary to perform these activities or duties safely.

.5 The Owner is also vitally interested in the health and safety of Contractors and their workers performing work for the Owner. Cooperation and support of the Contractor in the protection of the workers from injury or occupational disease is a major, continuing objective of the Owner. To achieve these goals, the Owner, in concert with the Contractors, will endeavour to make every effort to ensure that the Contractors provide a work site which is a safe and healthy work environment. The Owner insists that all Contractors and their workers are dedicated to the continuing objective of reducing risk and injury.

.6 The Contractor covenants and agrees to comply with all statutory and other obligations, including without limitation, the provisions of the Occupational Health and Safety Act (Ontario) and all Regulations thereto, and all amending and successor legislation, in connection with all work performed by either the Contractor, Sub-contractors, or any Other Contractor on, or in connection with, the Project.

.7 Without limiting the foregoing, for the purposes of this Contract, the Contractor agrees that it shall be the "constructor" of the Project within the meaning of the Act, and as such, shall assume all the obligations and responsibilities, and observe all construction safety requirements and procedures, and duties of inspection imposed by the Act on the "constructor", as therein defined, for all work and services performed by the Contractor, Subcontractors and Other Contractors on or in connection with the Project. The Contractor further covenants and agrees that the Owner and its existing and former officers, trustees, employees and agents, and their respective heirs, executors, administrators, successors and assigns shall be released from any obligations or liabilities otherwise imposed on the Owner, or on any of them, pursuant to the Act in connection with the Project, and that the Contractor shall assume all liability and responsibility in connection with same. The Contractor agrees to save harmless and indemnify the Owner from any losses, damages, costs and expenses of any kind, or nature whatsoever, including all

legal expenses, and all defence costs and related expert or consulting fees, incurred by the Owner, or any of them, arising in connection with the failure, default, or inability of the Contractor of the Owner, or any of them, to comply with any of the aforementioned statutory, or other legal requirements, or arising in connection with any breach by the Contractor of any of its covenants, agreements and obligations under this Contract.

.8 The Contractor shall inform and instruct Other Contractors that they, while performing work on this project, are under the authority of the Contractor. Other Contractors are to discuss and co-ordinate with, and follow instructions from, the Contractor on all matters of site access, vehicles, deliveries, storage, temporary facilities, coordination with the work of other subcontractors, work methods, scheduling, labour conditions, construction safety, environmental protection, security and all other matters which relate to the safe and proper execution of construction work.

.9 The Contractor shall ensure that all supervisory personnel on job site are fully aware of the procedures and requirements outlined herein and comply with all requirements specified.

.10 All contractors are responsible to ensure that all machinery and/or equipment are/is safe and that the workers perform their tasks in compliance with established safe work practices or procedures. Workers must receive adequate training in their specific work tasks to protect their health and safety.

.11 The Contractor shall be responsible for all persons and companies performing work, including other Contractors, on this project, at all times, up to and including, the date of Substantial Performance of the Work. Authority for coordination and instructions relating to all matters which relate to the safe and proper execution of construction work shall rest with the Contractor. The Contract Price will include the Contractor's fees for the coordination and supervision of the work of all Other contractors.

.12 In addition to the responsibility of all contractors as outlined in 1.1.10, above, Subcontractors will be held accountable for the health and safety of workers under their supervision.

.13 Every worker must protect his/her own health and safety by working in compliance with the law and with safe work practices and procedures established by the authorities having jurisdiction.

.14 All sections of the Occupational Health and Safety Act for Industrial Establishments, latest edition, and the Occupational Health and Safety Act for Construction Projects, latest edition, shall be enforced, by the Contractor, in their entirety, throughout the duration of the construction project.

.15 The Contractor shall provide the Consultant with the telephone number where the Contractor or his representative can be reached at any time, day or night, for the duration of the contract.

.16 Where an accident, explosion, or fire causes a person injury at the work place, and the worker is disabled from performing the usual task, the Contractor shall prepare a written notice and shall forward same to the Ministry of Labour within four days of the occurrence with a copy to the health and safety representative or the Joint Health and Safety Committee, containing such information and particulars as may be prescribed.

.1 Where a person is killed or critically injured from any cause at the work place, the Contractor shall immediately call the Ministry of Labour. A written notice from the Contractor shall be given to the Ministry of Labour within forty-eight hours after the occurrence, containing such information and particulars as may be prescribed, with copies to the Consultant and the Owner's Representative.

.2 The Contractor is advised that the accident scene is under the jurisdiction of the Ministry of Labour and no wreckage, articles, etc., shall be interfered with, disturbed, destroyed, altered or carried away at the scene, or connected with the occurrence, until the Ministry of Labour has given permission.

1.2 **REPORT ACCIDENTS**

.1 Promptly report in writing to the Consultant all accidents which cause death, personal injury or property damage, arising out of or in connection with the performance of the work on or adjacent to the site. Where death or serious injuries or serious damages are caused, the accident shall be reported immediately by telephone or messenger to the Consultant and to the relevant public authorities.

.2 If any claim is made by anyone against the Contractor or Subcontractor on account of any accident, the Contractor shall promptly report the facts in writing to the Consultant giving full details of the claim.

1.3 **FIRST AID FACILITIES**

.1 Provide at the site the equipment and medical facilities necessary to supply first-aid service to anyone who may be injured in connection with the Work, and to conform to the requirements of the authorities having jurisdiction over the Work.

1.4 **FIRE SAFETY REQUIREMENTS**

.1 The appropriate clauses of the Ontario Building Code, Ontario Fire Code, National Building Code of Canada and National Fire Code relating to fire safety and protection shall be strictly followed.

.2 Provide and maintain free access to temporary or permanent fire hydrants acceptable to local fire department.

.3 Provide sufficient temporary standpipes and connections, fire hose, valves, temporary cabinets, extinguishers, etc. to comply with the requirements of the governing Municipal and Provincial authorities.

.4 Make necessary adjustments and modifications to temporary fire protection as required during progress of the work. Remove such temporary work when permanent system is installed and operating.

.5 Conform to "Guidelines for Maintaining Fire Safety During Construction in Existing Buildings", provided by the Office of the Ontario Fire Marshal.

.1 Maintain existing exits and access to exits. Where an exit must be blocked, provide an alternate exit acceptable to Authorities Having Jurisdiction.

.2 Provide minimum 45 minute rated fire separations at junction between existing corridors in occupied spaces and new corridors under construction. Any required access through these partitions shall be with rated doors, frames with closers and latching.

.3 Maintain exiting fire department access route or provide new, or temporary, access route acceptable to the fire department.

.4 Do not store combustible materials adjacent to existing building or where such materials could pose a fire hazard to the building or the occupants.

.5 Cover existing windows exposed to construction with 16mm gypsum board on steel stud framing, on interior side of such windows. Louvres shall be similarly protected. Replace doors exposed to construction with hollow metal doors.

.6 Where temporary openings are made in existing floors, pack with mineral wool insulation to create temporary fire barrier.

.7 Existing fire alarm system is to be kept operational throughout the construction period. Keep fire department informed of any temporary shutdowns and arrange for alternate fire safety measures to be implemented during that period.

.8 Refer to the Ontario Fire Code for requirements for temporary shutdown of fire protections systems, including sprinklers and standpipe systems.

.9 Modify Fire Safety Plan in accordance with the Fire Code, when required to facilitate construction. Such modifications shall be determined in cooperation with the Owner and the local fire department.

1.5 **OVERLOADING**

.1 Ensure no part of Work is subjected to a load which exceeds the design live loads shown on the structural drawings. Ensure that scaffolding and false work are not overloaded. Do not cut load bearing members without approval of Consultant.

1.6 **FALSEWORK**

.1 Design and construct falsework in accordance with CSA S269.1 latest version.

1.7 **VISITORS**

.1 Provide hard hats for use by all visitors.

## 1.8 ADDITIONAL REQUIREMENTS FOR OCCUPIED SITES

.1 The existing school will be occupied throughout the academic year. When school is in session, additional safety requirements will apply, as outlined below:

.2 Flagman:

.1 Provide a full-time flagman at each vehicular construction entrance.

.2 The location of the Flagman shall be coordinated with the Owner, to ensure the safe guarding of staff, students, and the general public.

.3 Flagman shall be a designated person, not the Site Supervisor or other construction worker, and shall not be changed during the Project unless approved by the Owner.

.4 Flagman must have means of communication with Site Supervisor (phone or walkie-talkie).

.5 Flagman shall meet and escort all construction traffic from the site entrance into and out of the fenced construction area, from street through entrances to hoarding. No unaccompanied construction vehicles will be permitted on School Board property, outside of construction enclosure.

.6 Flagman shall control construction parking at the school site. Parking shall be as designated by Owner and school Principal.

.7 Contractor may provide a temporary shelter for the flagman, if necessary or desired, the cost of which shall be included in the Tender Price.

.8 Flagman shall be properly outfitted to carry out his duties, with appropriate safety clothing and equipment, including reflective vest, hand-held “Stop” sign and a visible identification tag.

.3 Access Control:

.1 The Contractor shall instruct all suppliers and subcontractors that they are required to contact the Site Supervisor by cell phone prior to entering the site, and await escort by the flagman.

.2 Site Supervisor shall then advise the flagman to meet and escort the vehicle.

.3 Gates of construction enclosure must remain closed and locked at all times and only opened for the time required for access/egress of authorized vehicles or personnel.

.4 Site Communication

.1 The Contractor shall provide the Owner and Principal with an emergency contact telephone number at which the Site Supervisor or other Contractor representative can be contacted directly during work hours and with voicemail available at all other times, including weekends and holidays, which will be checked regularly.

.2 Site Supervisor and flagman must have means of direct communication available at all times during work hours.

.3 Contractor shall be in daily communication with the school Principal to determine any activities which may involve safety concerns, whether school related or construction related.

## 1.9 SIGNAGE

.1 Provide signage indicating " Danger - Keep Out", "Hard Hats must be worn at all times", "Safety Shoes must be worn at all times", "No Trespassing", etc., mounted on all sides of Site, and additional signs as necessary to adequately warn the public and workmen of the inherent dangers of the site and requirements to maintain personal safety. Safety Signage is also required at all construction entrances

.2 During the school year, signage posted at gates shall state restrictions on hours of entry and egress, as agreed to by the Owner and Principal, and under no circumstances shall construction traffic be allowed within 30 minutes prior to school start, during recess, lunch break, and within 30 minutes after school dismissal.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 HAZARDOUS MATERIALS

.1 The Ontario Occupational Health and Safety Act requires the Owner to provide a list of Designated Substances to all prospective Contractors and they in turn must supply the list to their sub-trades who are likely to handle or disturb the material.

.2 Refer to survey of hazardous building materials in Supplementary Information Volume.

.3 Requirements by Owner's Abatement Consultant in Hazardous Building Materials Specifications for dealing with hazardous materials during building demolition or renovation work.

.4 Remove, transport, and dispose of hazardous materials in accordance with applicable laws, including the following:

- .1 Occupational Health and Safety Act, R.S.O. 1990, c. O.1., including the following regulations made under the Act:
  - .1 O.Reg. 213/91, Construction Projects, amended to 345/15 and
  - .2 O.Reg. 278/05, Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations amended 479/10.
- .2 Regulations for the transport of asbestos waste, including:
  - .1 Transportation of Dangerous Goods Act, 1992 (1992, c. 34)
  - .2 Dangerous Goods Transportation Act, R.S.O. 1990, c. D.1
- .3 Environmental Protection Act, R.S.O. 1990, C. E.19, and regulations under the Act, including:
  - .1 O.Reg. 102/94 Waste Audits and Waste Reduction Work Plans
  - .2 O.Reg. 103/94 Industrial, Commercial and Institutional Source Separation Programs
  - .3 R.R.O. 1990, Reg. 347: General - Waste Management

.5 Removal of asbestos containing materials is to be undertaken by forces trained in accordance with the requirements of O.Reg. 278/05.

.6 In accordance with the Ontario Health and Safety Act and regulations enacted under the Act the Contractor and sub-trades shall take appropriate precautions for the building and their work force.

.7 Should workers uncover materials which they suspect may contain asbestos, the Contractor shall contact the Owner for further direction.

.8 In accordance with the Ontario Health and Safety Act and regulations enacted under the Act the Contractor and sub-trades shall take appropriate precautions for the building and their work force. Such precautions may include, for the substances listed, the measures outlined below.

.9 Lead:

.1 Any operation involving lead-based paints may potentially produce significant exposures to lead if adequate controls are not provided. Exposure varies with the type of operation being employed.

.2 The presence of lead in building finishes left intact or found peeling in a few locations produces little exposure for workers to lead through contact, inhalation or ingestion.

.3 Operations involving the hand sanding and scraping of lead based paints can elevate exposure through inhalation. The use of a negative pressure respirator equipped with high efficiency particulate air (HEPA) filters is recommended to reduce exposure.

.4 Operations involving the machine sanding or abrasive cutting of paint and other surface coatings containing lead can elevate levels of much finer dust. The spray application of a lead bearing paint or coating produces a respirable fume. These operations increase the likelihood of exposure by inhalation. A negative pressure air-purifying respirator equipped with HEPA filters is recommended for these operations.

.5 Operations involving oxyacetylene torches or other heating operations produces the most significant exposure to lead in particular through inhalation and by contact of lead fumes solidifying on skin. A powered air-purifying respirator equipped with HEPA filters and full body covering is recommended for these operations.

.6 Lead found in solder of other pipe systems and electronic components poses no threat to the work force by inhalation, ingestion or by contact with the exception of maintenance or renovation activities. The maintenance of the pipe or electrical component may produce some exposure to lead fume during the seating on of lead solders but for a short duration of time. Inhalation is the source of entry and exposure is not very significant.

.7 All items identified in this section may be disposed of as regular non-hazardous waste unless concentrated. Metallic lead may be reclaimed through scrap metal dealers.

.10 Mercury

.1 Fluorescent light tubes contain small quantities of mercury gas. These sealed units do not pose any harm in the workplace except in the case of breakage. There are no liquid or residue present after breakage and spill cleaning is not a concern. A recommended practice is to evacuate the work area when breakage occurs. The gas will diffuse in about five to ten minutes and cleanup of the tubes can be performed. Mercury can be taken into the body by inhalation only from this source.

.2 The same precautions as those indicated for lead-based paints would apply to mercury in paints.

.3 Elemental mercury found in ampoules in electrical equipment may be disposed of as regular waste and should be turned over to the Owner for disposal through commercial recyclers. The other forms (light tubes and painted surfaces that have been concentrated) can be disposed of as regular waste.

.11 Silica

.1 Silica is presumed to be present in cement, cement blocks, bricks and mortar of the building. Unless the silica in these materials is reduced to respirable size (5 um or less) and the airborne concentration exceeds the time weighted average exposure of 0.2 milligrams per cubic metre in air, no adverse health effects are expected to occur. Building construction, renovation or demolition do not normally raise excessive exposure to silica with the exception of jack hammering, dry saw cutting or sand blasting. There is little likelihood for the work force to be exposed to excessive levels of respirable silica dust if the material is suppressed with water spray or flow. Respiratory protection is dependent on the type and airborne concentration of respirable silica present in the particular work environment.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 REGULATING DOCUMENTS

.1 Conform to the Ontario Building Code (Ontario Reg. 332/12), Ontario Fire Code (Ontario Reg. 213/07), Accessibility for Ontarians with Disabilities Act (Ontario Reg. 191/11), National Building Code of Canada 2010, 2012 Canadian Electrical Code (CEC), CSA B44 - Safety Code for Elevators and Escalators, CSA W59 - Welded Steel Construction, The Occupational Health and Safety Act, Ontario (R.S.O. 1990), the National Fire Code, the local municipal Fire Code, and all other applicable Codes and Building By-Laws. Conform to the requirements of the authorities having jurisdiction, such as public utilities. Where required under The Occupational Health and Safety Act, engage a Professional Engineer to design formwork and falsework for concrete.

.2 Contract forms, codes, standards and manuals referred to in these specifications are the latest published editions at the date of close of tenders. Meet or exceed requirements of specified standards.

.3 Provide copies of documents referred to in the Specification for joint use of Contractor and Consultant, on site.

### 1.2 DOCUMENTS REQUIRED BY BUILDING INSPECTOR

.1 Confirm with building inspector, at the commencement of construction, what documents are required for submission both during construction and for occupancy. Keep copies of such documents on site.

.2 At the time of request for occupancy, submit a complete package of all required documents to the building inspector. The package shall contain all documents required for the inspector's sign off for occupancy, and should be expected to include the following documents:

.1 Copies of Consultant's General Review Reports

.2 Copies of General Review Reports of consulting engineers

.3 Geotechnical testing and inspection reports confirming bearing capacity of soils

.4 Consultant's and engineers' letters confirming project is ready for occupancy in accordance with the provisions of the Ontario Building Code, Division C, section 1.3.3, Occupancy of Buildings.

.5 Concrete testing reports and inspection reports for reinforcing steel.

.6 Verification of compliance with tested designs for rated assemblies.

.7 Verification of Fire Protection Systems including:
.1 Verification of engineer supervised sprinkler, standpipe and hose system testing.
.2 Material and test certificates for all work, including below ground, in conformance with NFPA-13 and NFPA-14, as applicable.

.8 Verification of Fire Alarm System as follows:
- .1 Testing to CAN/ULC S537
- .2 Installation to CAN/ULC S524
- .3 Monitoring to CAN/ULC S561

.9 Additional documents as required by the municipality.

**END OF SECTION**

## PART 1 GENERAL

### 1.1 DESCRIPTION

.1 This section describes typical abbreviations and acronyms used in these specifications and on the drawings and schedules.

.2 When references are made in these specifications to the standards, specifications, or other published data of various international, national, regional, or local organizations, such organizations may be referred to by their acronym or abbreviation only.

.3 The list of abbreviations and acronyms is provided to aid in the interpretation of notations in the construction documents and shall not be used to alter the meaning of notes for which the meaning is readily inferable from the context.

.4 Abbreviations and acronyms can have more than one meaning. Their use shall be considered with respect to different subjects and disciplines where the context in which each is used makes the meaning clear.

.1 Example:

.1 CB on floor plans typically refers to a chalkboard

.2 CB on site plans typically refers to a catchbasin

.3 CB on electrical plans typically refers to a circuit breaker

.5 Where additional or alternate abbreviations and acronyms are listed and used on drawings, schedules, and in the specification sections prepared by subconsultants, those shall apply to the documents on which they are noted.

.6 Discrepancies shall be noted and brought to the Consultant's attention for interpretation.

### 1.2 LIST OF ABBREVIATIONS

| | |
|---|---|
| **A** | |
| AB | Air Barrier |
| A/B | Anchor Bolt |
| AC | Air Conditioning |
| ACT | Acoustic Ceiling Tile |
| ADD | Addendum |
| ADJ | Adjustable |
| AFF | Above Finished Floor |
| AFG | Above Finished Grade |
| AHU | Air Handling Unit |
| ALM | Alarm |
| ALUM | Aluminum |
| ANN | Annunciator Panel |
| ANO | Anodized |
| AODA | Accessibility for Ontarians with Disabilities Act |
| AUTO | Automatic |
| A/V | Audio Visual or Air/Vapour |
| AVB | Air/vapour Barrier |
| AWT | Acoustic Wall Treatment |
| AWU | Acoustic Wall Unit |

**B**

| | |
|---|---|
| BD | Board |
| BEV | Bevelled |
| BF | Barrier-free |
| BH | Bore Hole |
| B/H | Bulkhead |
| BIT | Bituminous |
| BLDG | Building |
| BLK | Concrete Block |
| BM | Beam |
| B/M | Bench Mark |
| BN | Bull Nosed |
| BOT | Bottom |
| BP | Bearing Plate |
| BRDG | Bridging |
| BRK | Brick |
| BUR | Built-up Roofing |
| BV | Block Vent |

**C**

| | |
|---|---|
| CAB | Cabinet |
| CAP | Cementitious Acoustic Panel |
| CAR | Carpet |
| CB | Chalkboard, or Catchbasin |
| C/B | Catchbasin |
| CBMH | Catchbasin Manhole |
| C/C | Centre to Centre |
| CEC | Canadian Electrical Code |
| CEM | Cement |
| CER | Ceramic |
| CH | Cabinet Heater |
| CJ | Control Joint |
| CL | Centre Line |
| CLF | Chain Link Fence |
| CLG | Ceiling |
| CLR | Clear |
| CMU | Concrete Masonry Unit |
| COL | Column |
| CONC | Concrete |
| CONSTR | Construction |
| CONT | Continuous |
| CONTR | Contract or Contractor |
| CONV | Convector |
| CORR | Corridor |
| CP | Control Panel |
| CPT | Carpet |
| CR | Coat Rack |
| CS | Convenience Shelf |
| CSA | Canadian Standards Association |
| C/S | Concrete, Sealed |
| CT | Ceramic Tile |
| cUL | UL Tested for Canada |
| CTR | Centre |
| CW | Curtain Wall |
| C/W | Complete with |
| CWT | Ceramic Wall Tile |

**D**

| | |
|---|---|
| DAMP | Dampproofing |
| DAT | Datum |
| DBL | Double |
| DEMO | Demolish or Demolition |
| DET | Detail |
| DF | Drinking Fountain |
| DIA | Diameter |
| DIAG | Diagonal |
| DIFF | Diffuser |
| DIM | Dimension |
| DISP | Dispenser |
| DL | Door Louver |
| DN | Down |
| DSP | Downspout |
| DVTL | Dovetail Joint |
| DRY | Dryer |
| DW | Dishwasher |
| DWG | Drawing |

| | |
|---|---|
| **E** | |
| EF | Each Face or Exhaust Fan |
| EJ | Expansion Joint |
| EL | Elevation |
| ELEC | Electrical |
| ELEV | Elevator |
| EQL | Equal |
| EQ/T | Equivalent Thickness |
| EQPT | Equipment |
| EX | Existing |
| EXH | Exhaust |
| EXP | Expansion |
| EXP STR | Exposed Structure |
| **F** | |
| F1 | Frame Type 1, etc. |
| FA | Fire Alarm |
| FARA | Fall Arrest Roof Anchor |
| FBD | Fibreboard |
| FD | Floor Drain |
| F/D | Fire Damper |
| FDC | Fire Department Connection |
| FDN | Foundation |
| FEC | Fire Extinguisher Cabinet |
| FFL | Finish Floor Level |
| F.G. | Fixed Glass |
| FH | Fire Hydrant |
| FHC | Fire Hose Cabinet |
| FIN | Finish |
| FIX. | Fixture |
| FLG | Flashing |
| FLEX | Flexible |
| FLUOR | Fluorescent |
| FPR | Fire Protection Rating |
| FR | Fire Retardant/rated |
| FRG | Fire Rated Glass |
| FRR | Fire Resistance Rating |
| FS | Fire Separation |
| FTG | Footing |
| FURR | Furring |
| **G** | |
| GA | Gauge |
| GALV | Galvanized |
| GB | Gypsum Board |
| GL | Glass |
| GRB | Grab Bar |
| GVL | Gravel |
| GYP BD | Gypsum Board |
| GWG | Georgian Wired Glass |
| **H** | |
| HB | Hose Bibb |
| HC | Handicapped |
| HD | Hand Dryer or Heavy Duty |
| HM | Hollow Metal |
| HOD | Hold Open Device |
| HRD | Hair Dryer |
| HTD | High Traffic Doors |
| HVAC | Heating, Ventilation and Airconditioning |
| HWT | Hot Water Tank |
| HYD | Fire Hydrant |
| **I** | |
| ID | Inside Diameter |
| IGU | Insulated Glazing Unit |
| INS | Insulation |
| INSUL | Insulate |
| ISOL | Isolation |
| **L** | |
| LAB | Laboratory |
| LAM | Laminate |
| LAT | Lay-in Acoustical Tile |
| LAT-1 | Lay-in Acoustical Tile (Type 1) |
| LAV | Lavatory |
| LBL | Label |
| LDBR | Load Bearing |
| LDG | Landing |
| LF | Light Fixture |
| LH | Left Hand |
| LHR | Left Hand Reverse |

| | |
|---|---|
| LIB | Library |
| LINO | Linoleum |
| LLH | Long Leg Horizontal |
| LLV | Long Leg Vertical |
| LNTL | Lintel |
| LONG | Longitudinal |
| LPT | Low Point |
| LMC | Linear Metal Ceiling |
| LS | Light Standard |
| LSA | Lateral Support Angles |
| LVL | Level |
| LV-1 | Louvre (Type 1) |
| LWB | Light Weight Block |
| LWC | Linear Wood Ceiling |

**M**

| | |
|---|---|
| M | Metres |
| M1 | Mirror Type 1, etc. |
| MAX | Maximum |
| MDF | Medium Density Fibreboard |
| MECH | Mechanical |
| MEMB | Membrane |
| MET | Metal |
| MEZZ | Mezzanine |
| MH | Manhole |
| MIN | Minimum |
| MIRR | Mirror |
| MISC | Miscellaneous |
| MLWK | Millwork |
| MM | Millimetres |
| MO | Masonry Openings |
| MOD BIT | Modified Bituminous |
| MR | Moisture Resistant |
| MTD | Mounted |
| MUL | Mullion |
| MWP | Membrane Waterproofing |

**N**

| | |
|---|---|
| NAT | Natural |
| NBCC | National Building Code of Canada |
| NFHB | Non-freeze Hose Bibb |
| NFPA | National Fire Protection Association |
| NIC | Not in Contract |
| NO. | Number |
| NOM | Nominal |
| NSF | Non-slip Flooring |
| NTS | Not to Scale |

**O**

| | |
|---|---|
| OA | Overall |
| OBC | Ontario Building Code |
| OC | On Centre |
| OD | Outside Diameter |
| O/H | Overhead |
| OHS | Overhead Stop |
| OWSJ | Open Web Steel Joist |
| OV | Oven |

**P**

| | |
|---|---|
| P | Paint |
| PAP | Prefinished Aluminum Panel |
| PA | Public Address System |
| PAR | Parallel |
| PB | Push Button (Door Operator) |
| PBD | Particleboard |
| PC | Precast Concrete |
| PE | Porcelain Enamel |
| PER. | Perimeter |
| PERF | Perforated |
| PERIM | Perimeter |
| PERP | Perpendicular |
| PG | Plate Glass |
| PL | Plaster |
| PLAM | Plastic Laminate |
| PLUMB | Plumbing |
| PLYWD | Plywood |
| PMF | Prefinished Metal Flashing |
| PMS | Prefinished Metal Siding |

| | |
|---|---|
| PMP | Prefinished Metal Panel |
| PNL | Panel |
| POLY | Polyethylene or Polyolefin |
| PR | Pair |
| PREFIN | Prefinished |
| PRELIM | Preliminary |
| PT | Paint, or Porcelain Tile |
| PTD | Paper Towel Dispenser |
| PTN | Partition |
| PTW | Preservative Treated Wood |
| PVG | Paving |
| PWC | Plastic Wall Covering |

**Q**

| | |
|---|---|
| QT | Quarry Tile |

**R**

| | |
|---|---|
| R | Radius |
| RA | Return Air or Roof Anchor |
| RAD | Radiator |
| RB | Rubber Base |
| RCP | Reflected Ceiling Plan |
| RD | Roof Drain |
| REBAR | Reinforcing Bar |
| RCONV | Recessed Convector |
| RCH | Recessed Cabinet Heater |
| REC | Recessed |
| REF | Reference / Refer |
| REFR | Refrigerator |
| REINF | Reinforce/d/ing/ment |
| REM | Remove or Removable |
| RES | Resilient |
| REV | Revise / Revision |
| RFG | Roofing |
| RFS | Room Finish Shedule |
| RH | Right Hand |
| R/H | Roof Hopper |
| RLG | Railing |
| RM | Room, or Recess Mounted |
| RMC | Reinforced Masonry Column |
| RSF | Resilient Sheet Flooring |
| RPF | Resilient Plank Flooring |
| RUBB | Rubber |
| RUH | Recessed Unit Heater |
| RWL | Rainwater Leader |

**S**

| | |
|---|---|
| S-1 | Stain (Type) 1 |
| SAD | Security Alarm Device |
| SAN | Sanitary |
| SC | Security Contact or Solid Core |
| SCHED | Schedule |
| SD | Soap Dispenser |
| SEC | Special Epoxy Coating |
| SF | Sheet Flooring |
| SIM | Similar |
| SK | Sink |
| SL | Slate |
| SND | Sanitary Napkin Dispenser |
| SNR | Sanitary Napkin Receptacle |
| SOG | Slab on Grade |
| SP | Spandrel Panel |
| SPEC | Specifications |
| SPC | Special Coating |
| SPF | Sports Flooring |
| SPKR | Speaker |
| SRCONV | Semi Recessed Convector |
| ST | Steel |
| ST.ST. | Stainless Steel |
| STAG | Staggered |
| STC | Sound Transmission Class |
| STD | Standard |
| STIFF | Stiffener |
| STOR | Storage |
| STRUC | Structure or Structural |
| SUPPL | Supplement/al |
| SURF | Surface |
| SUSP | Suspended |
| SVF | Sheet Vinyl Flooring |
| SW | Sidewalk |
| SWF | Special Wall Finish |
| SYM | Symbol |

| | |
|---|---|
| **T** | |
| TB | Tackboard |
| T&B | Top and Bottom |
| TBD | To Be Determined |
| TC | Teacher's Closet, or Top of Curb |
| TEC | Tectum Panel |
| T&G | Tongue and Groove |
| TEMP | Tempered Glass |
| TERR | Terrazzo |
| TEL | Telephone |
| TEMP | Temporary or Tempered |
| TH | Test Hole |
| TM | Tilted Mirror |
| T/O | Top of |
| TOC | Top of Curb |
| TOCS | Top of Concrete Slab |
| TOS | Top of Steel |
| TPG | Tempered Plate Glass |
| TPH | Toilet Paper Holder |
| TR | Transom |
| TYP | Typical |
| **U** | |
| U/C | Undercut |
| U/G | Underground |
| UH | Unit Heater |
| ULC | Underwriter's Laboratories of Canada |
| UL | Underwriter's Laboratories (USA) |
| UNEX | Unexcavated |
| UNF | Unfinished |
| UNO | Unless Noted Otherwise |
| U/P | Unpainted |
| UU | Urinal |
| U/S | Underside |
| UTIL | Utility |
| **V** | |
| VAR | Variable, Varies |
| VB | Vapour Barrier |
| VCT | Vinyl Composition Tile |
| VERT | Vertical |
| VEST | Vestibule |
| VF | Vinyl Faced |
| VR | Vapour Retarder |
| VT | Vinyl Tile |
| VWP | Vinyl Wall Panel |
| **W** | |
| W1 | Window Type 1, etc. |
| W/ | With |
| WAP | Wood Acoustic Panel |
| WASH | Washing Machine |
| WB | White Board |
| WC | Watercloset (Toilet) |
| WD | Wood |
| WDF | Wood Flooring |
| WF | Wash Fountain |
| WG | Wired Glass |
| W/O | Without |
| WP | Waterproofing, Working Point |
| WR | Washroom |
| W/R | Water Resistant |
| WSF | Wood Sports Flooring |

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 QUALITY ASSURANCE

.1 Refer also to the Quality Control Provisions of Section 00 10 00, General Instructions.

.2 Provide a system of quality control to ensure that the minimum standards specified herein are attained.

.3 Bring to the attention of the Consultant any defects in the work or departures from the Contract Documents which may occur during construction. The Consultant will decide upon corrective action and state recommendations in writing.

.4 The Consultant's general review during construction and inspection by independent inspection and testing agencies reporting to the Consultant are both undertaken to inform the Owner of the Contractor's performance and shall in no way augment the Contractor's quality control or relieve him of contractual responsibility.

### 1.2 NOTIFICATION

.1 Give the Consultant advance notice of shop fabrication, field erection and other phases of the work so as to afford him reasonable opportunity to inspect the work for compliance with contract requirements. Failure to meet this requirement may be cause for the Consultant to classify the work as defective.

### 1.3 DEFECTIVE MATERIALS AND WORKMANSHIP

.1 Where factual evidence exists that defective workmanship has occurred or that work has been carried out incorporating defective materials, the Consultant may have tests, concrete cores, inspections or surveys performed, analytical calculation of structural strength made and the like in order to help determine whether the work must be replaced, Test, inspections or surveys carried out under these circumstances will be made at the Contractor's expense, regardless of their results, which may indicate that, in the Consultant's opinion, the work may be acceptable.

.2 All testing shall be conducted in accordance with the requirements of the Ontario Building Code, except where this would, in the Consultant's opinion, cause undue delay or give results not representative of the rejected material in place. In this case, the tests shall be conducted in accordance with the standards given by the Consultant.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 TEMPORARY TELEPHONE AND FAX

.1 Install and pay for all telephone services for Contractor's own use, and for the Owner's and Consultant's use.

.2 Refer to Section 01 52 00, Construction Facilities, for alternatives to site phone provisions.

### 1.2 POWER AND WATER SUPPLY

.1 Provide all temporary light and power complete with all wiring, lamps and similar equipment as required for completion of the Work. Provide adequate lighting for all workmen, sufficient for safety and for execution of good workmanship, taking particular care to observe all safety requirements. Adequate temporary lighting will be insisted upon. The Owner will not be liable for any loss, damage, delay, or claims for extra costs resulting from lack of services.

.2 Existing building services may be used, as available. This does not include emergency generators or batteries.

.3 Provide an adequate pure fresh water supply for the use of trades. Run supply pipe from nearest available source and maintain in good condition until the permanent system is installed and ready for use. Provide a sufficient number of faucets on each floor.

.4 Ensure continued water and power supply to adjacent residences and buildings throughout the construction period. Arrange for temporary services, including approvals from authorities having jurisdiction, where any interruption is anticipated.

### 1.3 TEMPORARY HEATING AND VENTILATION

.1 Furnish heating apparatus and fuel for heating the temporary offices and sheds.

.2 Provide for the proper heating and drying out of the work during construction, until the completion of the heating system, by the use of approved propane portable heating equipment. Assume full responsibility for damage caused by temporary heating equipment, such as smoke, or overheating. Furnish all equipment labour and fuel to protect all work and maintain the building at not less than 10°C. The use of Salamanders or other open flame type heaters will not be permitted.

.3 When the building or part thereof is temporarily enclosed, provide sufficient temporary piping and temporary unit heaters or radiators or other suitable heating equipment to maintain all parts of the enclosed work at not less than 15°C. or higher if required by any finishing trade. Maintain strict supervision of operation of temporary heating and ventilating equipment. The Contractor shall be fully responsible for damage caused by temporary heating equipment, such as smoke or overheating.

.4 When building or part of building is enclosed and heated, maintain sufficient ventilation to prevent build up of moisture and condensation, to enable the work of the finishing trades to be correctly applied. Provide adequate ventilation during and after operation involving materials or processes involving potentially harmful fumes or orders.

.5 When the building is enclosed with permanent construction, the heating system installed under this contract may be used for temporary heating, subject to the Owner's approval, provided that:

.1 Written approval for such use has been obtained from the Owner.

.2 The areas to be heated are closed at all times.

.3 Temporary use of the permanent heating system shall be carried out under the direction of the Heating Trade who shall be fully responsible for the safety of the system and its operation including provision of trained operators.

.4 The system shall be handed over in perfect condition and where necessary be overhauled to be in new condition.

.5 The Contractor pays operation costs and all costs incurred by compliance with these provisions.

.6 At completion of work, thoroughly clean equipment and system, replace all filters, and service all components, so that all guaranties and warranties on the equipment and systems used shall remain in effect for a minimum of one year from the date of Substantial Performance of the Work.

.6 Provide local exhaust ventilation to prevent harmful accumulations of hazardous substances into atmosphere of occupied areas. Dispose of exhaust materials in manner that will not result in harmful exposure to persons.

.7 Ventilate storage spaces containing hazardous or volatile materials. Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful elements. Store paints & solvents in secure, locked, ventilated room at all times.

.8 Upon completion of the work, the heating equipment and system shall be thoroughly cleaned, tested and put into operation and turned over to the Owner in perfect condition; after approval by the Consultant and their Consulting Engineers. All warranties must be valid from date of Substantial Performance of the Contract, except in the case of partial occupancy where it shall be date of occupancy.

.9 All concrete, masonry and finish shall be protected from frost during construction by temporary enclosures and heating or by other methods approved by the Consultant. The Contractor shall be solely responsible for damage to work through lack of adequate heating or protection and for smoke damage.

.10 Activate ventilation system under direction of Consultant to provide temporary heat and ventilation, when Consultant is satisfied that system will not be damaged by freezing. Protect ducting system with filters, inspect daily and replace weekly or more frequently as necessary. Finally vacuum clean entire ducting system and renew or replace all filters on substantial completion.

.11 Maintain strict supervision of operation of temporary heating and ventilating equipment.

.1 Enforce conformance with applicable codes and standards.
.2 Enforce safe practices.
.3 Prevent abuse of services.
.4 Prevent damage to finishes.
.5 Vent direct-fired combustion units to outside.

1.4 **REMOVAL OF TEMPORARY UTILITIES**

.1 Remove temporary utilities from site when directed by Consultant and/or at the completion of the project.

1.5 **FIRE EXTINGUISHERS**

.1 An adequate number of ABC type fire extinguishers shall be provided for the protection of the work during construction.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 CONTRACTOR'S SITE OFFICE

.1 Space within school may be used for Contractor's site office during summer vacation (July / August) only. At all other times, provide and maintain a site office heated to 22°C, lighted 750 Lx and ventilated, of sufficient size to accommodate 10 persons for site conference and job meetings.

.2 The site office shall be furnished with the following as a minimum requirement:

.1 Desk and chair
.2 File cabinets as required for storage
.3 Plan file for storage of drawings
.4 Table and stacking chairs to provide seating at job meetings
.5 Telephone, or other acceptable means of communication as noted below.

.3 Mobile telephone will only be accepted in place of site telephone if the contact number for the site is available at all times when construction personnel are on site, and subject to acceptance by Owner and Consultant.

.4 Locate site office in a suitable location to approved of the Consultant.

.5 The Contractor shall maintain the following documents, up-to-date, in site office:

.1 Contract Documents
.2 Reviewed shop drawings
.3 All instructions and change documents, ie Work Authorizations, Jobsite Instructions, Notices of Contemplated Change, Change Orders
.4 All inspection and test reports
.5 Permit drawings and specifications
.6 As-built drawings

### 1.2 STORAGE SHEDS

.1 Provide adequate weather-tight sheds with raised floors, for storage of materials, tools and equipment which are subject to damage by weather.

.2 Storage sheds shall be painted and doors shall be fitted with locks.

.3 Locate storage sheds adjacent to building away from road to approved of the Consultant.

.4 Material stored on site must be protected by tarpaulins until enclosed in building.

1.3 **SANITARY FACILITIES**

.1 Contractor may use one dedicated washroom facility during summer vacation. At all other times, furnish and maintain in a sanitary condition, suitable painted building containing adequate sanitary accommodation for all workmen in accordance with local Municipal and Provincial sanitary regulations, and to the approval of Public Health Authorities and the Consultant, with all necessary water, sewage, light and heat supplied in sufficient quantity. The use of single portable serviced units will be permitted providing siting is approved.

.2 Clean school washroom at completion of project.

1.4 **REMOVAL OF TEMPORARY FACILITIES**

.1 Remove temporary facilities from site when directed by Consultant and/or at the completion of the project.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 SITE ENCLOSURE

.1 Install temporary fencing at start of mobilization to fully secure site. No construction work or excavation work may be undertaken on an unsecured site.

.2 Provide site enclosures as required on drawings.

.3 Enclose site to conform with current legislation and safety standards. Provide temporary 1.8m high galvanized chainlink fencing around entire construction site, complete with gates as required for site access. Fencing shall remain throughout construction period and until all construction debris has been removed from site. Gates shall be locked when no work is in progress.

.4 For temporary fencing all posts, other than gate posts, shall be driven in minimum 1.5m, at maximum 3048mm spacing. Gate posts shall be set in concrete. Secure temporary fencing to new fences where they meet.

.5 Erect enclosure so as to provide a secure compound for construction equipment & supplies. Hold the Owner harmless from any damage or expense arising from failure to properly execute such work.

.6 Provide, erect, and maintain hoarding for construction as required for safety or as otherwise agreed to with the Consultant, or as directed by Authorities Having Jurisdiction. Confirm that hoarding is designed to resist wind loads.

.7 Gates to be kept locked except during working hours.

.8 Maintain hoarding during the period of the Contract.

.9 Should the project be stopped for any reason, provide and maintain all necessary fencing and protection to protect building & site from damage.

.10 On completion of the contract, take down and remove hoarding and gates from the site as well as the plastic snow-fence enclosure at the drip line of all trees that are to remain.

### 1.2 DRAINAGE AND DEWATERING

.1 Provide temporary drainage and pumping as necessary to keep excavations and Site free from water.

.2 Pumping of water containing silt in suspension into waterways, sewer or drainage systems is prohibited.

.3 Dispose of water containing silt in suspension in accordance with local authority requirements. Silt fencing is required to contain silt on site.

.4 Take full responsibility for maintenance of existing drainage, above ground and underground, adjacent to the Work or affected by the Work.

.5 Before commencing any Work likely to affect the drainage of water from the Site, provide necessary alternative drainage systems to ensure that water will be conducted to alternative outlets. Do not block or impede any drain, roof outlet or rainwater leader until such safety precautions have been made.

1.3 **SILT CONTROL**

.1 Maintain existing silt control to prevent silt migration into water courses, municipal storm sewers and adjacent properties.

.2 Provide, install, and maintain any additional silt fencing required by the Municipality to control run off from site.

1.4 **TREE PROTECTION**

.1 Protect all existing trees from damage during the construction period. Protection to be in accordance with municipal standards and approvals.

.2 Refer to Section 32 01 90 for tree protection zone required.

.3 Confine movement of heavy equipment, storage of same, and storage of materials to a predetermined area. Do not store materials or place equipment over root systems of any existing trees.

.4 No rigging cables shall be wrapped around or installed in trees. Do not flush concrete trucks or cement mixing machines over root systems or near trees. Flush concrete trucks or cement mixing machines in areas approved by Consultant.

.5 Protect plant and root systems from damage, compaction and contamination resulting from construction by erecting hoarding fence at the dripline of existing vegetation to be preserved to the satisfaction of Consultant.

.6 Where root systems of trees are exposed directly adjacent to a structure backfill with good loam only.

.7 If any existing tree to remain is injured and does not survive the following year, replace with a tree of similar size and value, as directed by the Consultant, at no additional cost to Owner.

.8 Should the destroyed tree be of such a size or shape that it cannot be feasibly replaced, then the Contractor shall compensate the owner for the minimum sum of one thousand dollars ($1,000.00) per destroyed tree.

.9 Identify plants, condition of plants, and limits of root systems to be preserved to satisfaction of Landscape Architect. Report any discrepancy in plant condition and preservation status prior to any removal.

.10 Install hoarding in conformity with the requirements of Authorities Having Jurisdiction, and details on landscape drawings.

.11 From time of acceptance by Consultant to end of warranty period, perform following maintenance operations:

.1 Water to maintain soil moisture conditions for optimum growth and health of plant material without causing erosion.

.2 Apply biological controls in accordance with Federal, Provincial and Municipal regulations as and when required to control insects, fungus and disease. Obtain project approval from Consultant prior to application.

.3 Apply organic urea fertilizer in early spring at suppliers suggested rate.

.4 Remove dead, broken or hazardous branches from plant material.

.5 Submit monthly written reports to Consultant identifying:
.1 Maintenance work carried out
.2 Development and condition of plant material
.3 Preventative or corrective measures required which are outside Contractor's responsibility

.6 Prune crown to compensate for root loss while maintaining general form and character of plant.

1.5 **SITE PROTECTION**

.1 Supply, install and maintain all guard rails, barriers, night lights, sidewalk and curb protection as may be necessary or as the by-law may require.

.2 Supply, install and maintain all necessary temporary doors, screens and coverings to protect work areas. All such work shall be neatly painted. Doors shall have hasp and substantial padlock. Owners representative shall have key or combination where access is required. Provide and maintain temporary fencing at excavations, etc. as required for safety. Protect existing asphalt and concrete paving and curbs from damage and make good any damage at completion of project.

.3 Protect footings, masonry, mortar, concrete, and all frost susceptible materials from cold weather and rain. Protect all of the work from damage by the elements.

.4 Properly protect floors and roofs from any damage. Take special precautions when moving heavy loads or equipment over floors and roofs.

.5 Keep floors free of oils, grease or other such materials likely to discolour them and/or affect bonding of applied surfaces.

.6 Ensure that no part of the Work is loaded greater than it was designed for, when completed. Make any temporary support as strong as the permanent support. Place no load on concrete structure until it has sufficient strength to safely bear such load.

.7 Protect glass and other finishes against heat, slab and weld splatters, using appropriate protective shields and covers.

.8 Provide and maintain, in good working order, appropriately labelled ULC fire extinguishers, to the approval of Authorities Having Jurisdiction.

.9 Provide a minimum of two safety helmets on site at all times for the use of any other Owner authorized visitors to the site. It is the Contractor's responsibility to make certain that any such visitors wear the protective headgear and any other safety gear which may be necessary at that particular time of construction.

.10 Should the job be stopped for any cause, the Contractor shall be responsible for and provide all necessary protection to prevent damage by weather or other cause until the cause of stoppage has been cleared.

.11 The Contractor shall be entirely responsible for supervision of project and for protection of public from vehicles in movement, stockpiled materials and construction.

.12 The Contractor is responsible for the prevention of vandalism and theft of all tools, equipment and materials.

.13 Any damage to roadways must be repaired immediately, to municipal standards.

.14 The Contractor is responsible for snow removal on sidewalks adjacent to work areas and all are as required for access to site.

.15 Any damage to site by the Contractors forces, delivery vehicles, etc., must be made good at the end of the job. Similarly any damage to curbs, sidewalks, or other municipal property shall be made good by the Contractor.

1.6 **TEMPORARY DRIVEWAY ACCESS**

.1 Ensure continuous access to all existing driveways from municipal and regional roads. Provide steel plates as required to bridge all excavations, trenches, and other site disturbances at driveway locations. All work to be coordinated with property owners and building occupants.

.2 All work to conform to municipal and regional standards.

1.7 **PROTECTION DURING WINTER**

.1 The Contractor shall protect footings and other concrete and all other work from frost by methods approved by the Consultant to ensure that continuous or uninterrupted construction may be carried out throughout the winter from date of award of Contract, to completion of same. The Contractor shall be solely responsible for the damage to work through lack of adequate heating or protection.

1.8 **TEMPORARY DUST CONTROLS, DUST PROOF PARTITIONS**

.1 Supply and install a dust proof partition in the existing school at corridors doorways abutting new work prior to any work taking place. Call for review by Owner/Consultant after dust proof partitions are installed.

.2 Dust proof partition shall consist of 92mm steel stud framing to the underside of deck with one layer of 13mm plywood sheathing covered by 10 mil polyethylene sheet caulked all around the partition covered by two layers of 16mm Type X gypsum board with off set joints taped and filled. The gypsum board will be painted with two coats of good quality white paint.

.3 Dust proof partition shall be erected outside of school operating hours and shall remain in place until the new Work is ready for occupancy, and accepted by the Owner.

.4 Place filters in return air vents in all work areas to prevent dust from entering the existing HVAC system.

.5 Ensure interior of all new ductwork is cleaned before connection to the existing HVAC system and commencement of operation of new system components. If system is put into operation before work is complete in any area, provide temporary filters in return air vents and grills.

.6 Minimize the amount of dirt tracked into the existing building. Provide mats at all entrances used by construction personnel to enter the school.

.7 Keep dust, dirt, and debris away from fresh air intakes, open doors and windows, and from areas where it could be tracked into the building by students, staff, or visitors to the school. Assume responsibility for cleaning up all dirt, debris, mud, water, snow, etc., tracked in by construction personnel.

1.9 **MAINTAINING INDOOR AIR QUALITY**

.1 Smoking is not permitted inside the building or on the school property at any time. The Contractor shall post “No Smoking” signs throughout the work areas to enforce this requirement.

.2 Minimize the time that vehicles are left idling on site. Keep idling vehicles away from open doorways and windows, open areas of the building addition, fresh air intakes, and areas where students are gathered.

.3 All adhesives, sealants, paints and coatings applied onsite must be low VOC products.

.4 Products requiring the use of adhesives, sealants, paints and other coatings, are to be assembled offsite as much as possible. Such adhesives, sealants, and coatings shall be low VOC products, where suitable products are available.

.5 No toxic chemicals or fuels are permitted to be stored inside the building.

.6 Refueling of equipment is to be undertaken outside the building.

.7 Gas powered equipment is not to be used inside the building. Use electric or propane powered equipment only, and to acceptance of Owner and Consultant.

1.10 **SECURITY**

.1 The Contractor shall be entirely responsible for supervision of project and for protection of public from vehicles in movement, for stockpiled materials and construction. Vehicular parking and stockpile materials must be maintained on the construction site only. No street parking or stockpiling will be allowed on the Municipal streets.

.2 The Contractor is responsible for the prevention of vandalism and theft of all tools, equipment and materials until date of Substantial Performance of Contract.

.3 The Contractor shall provide 24 hour surveillance on site from date of Substantial Performance to date of acceptance and occupancy by the Owner.

1.11 **PROTECTION OF SODDED AREAS**

.1 Protect all new sodded areas with warning signs and temporary fencing for full duration of grow-in period, until acceptance.

.2 Provide 1200mm high chainlink fence to completely enclose all newly sodded areas. Plastic snow fence will not be accepted.

.3 If sod is not established and accepted by the Consultant before the end of the growing season, then the fencing shall remain in place over the winter and for a minimum of 30 days after the start of the next growing season, and until acceptance of the sodded areas. Refer to Section 32 92 23, Sodding, for requirements for acceptance.

1.12 **REMOVAL OF TEMPORARY BARRIERS**

.1 Remove temporary barriers and enclosures from site when directed by Consultant and/or at the completion of the project.

.2 Remove temporary enclosure around newly sodded areas once sod is fully established and/or when instructed to do so by the Owner.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 LAYOUT

.1 Report any dimensional discrepancies immediately to the Consultant, and confirm as soon as possible any job measurements required for shop drawings, etc. Co-ordinate all trades, including mechanical and electrical.

### 1.2 DIMENSIONS

.1 Ensure that necessary job dimensions are taken and trades are co-ordinated for the proper execution of the work. Assume complete responsibility for the accuracy and completeness of dimensions and for all co-ordination.

.2 Verify that work is executed in accordance with dimensions indicated, that levels and clearances are maintained, and that work installed in error is rectified before construction continues.

.3 Check and verify all dimensions including interfacing of services. Dimensions, when pertaining to the work of other trades, shall be verified with the trade concerned. Ensure that all Subcontractors co-operate for the proper performance of the work.

.4 Do not scale directly from the drawings; this applies all drawings, whether in paper or digital format. If there is ambiguity or lack of information, immediately inform the Consultant. Any change caused by lack of such review shall be the responsibility of the trade concerned.

### 1.3 SITE VERIFICATION

.1 Include costs to X-Ray floors and surfaces which are to be cut to accommodate new work.

.2 Include cost for underground service locates at all locations. Modify layout of new work to suit (in consultation with Consultant).

.3 Include cost to survey site to confirm final layout.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 CUTTING AND PATCHING

.1 Before cutting, drilling or sleeving load-bearing elements, obtain approval of location and method.

.2 Do not endanger work or property by cutting, digging, or similar activities. No trade shall cut or alter the work of another trade who has installed it unless approved by that trade.

.3 Cut and drill with true smooth edge to minimum suitable tolerances.

.4 Fit construction tightly to ducts, pipes and conduit to stop air movement completely. The trade performing work that penetrates a fire, air, vapour, moisture, thermal or acoustic separation element of the building shall pack voids tightly with insulation, rated where required; seal air, vapour and moisture barriers; and caulk joints as may be required to ensure that no air movement through the penetration is possible.

.5 Cutting, drilling and sleeving of work shall be done only by the trade who has installed it. The trade requiring drilling and sleeving shall inform the trade performing the work of the location and other requirements for drilling and sleeving. The Contractor shall directly supervise performance of cutting and patching.

.6 Replace and/or make good damaged work.

.7 Patching or replacement of damaged work shall be done by the subcontractor under whose work it was originally executed, and at the expense of the subcontractor who caused the damage.

### 1.2 CONCEALMENT

.1 Conceal all pipes, ducts and wiring in finished areas except where indicated otherwise. This includes new work in existing building.

.2 Where furring out is required, use material similar to adjacent surfaces except where indicated otherwise.

.3 All new horizontal runs of ducts, pipes and conduits shall be concealed in ceiling spaces.

.4 All new duct drops and risers shall be concealed in ceiling spaces, bulkheads or furred out duct shafts. All new pipe and conduit drops and risers shall be buried in walls. New devices in walls shall be recessed.

1.3 **MECHANICAL AND ELECTRICAL EQUIPMENT**

.1 Mechanical and Electrical services must be temporarily capped or terminated to permit renovation in existing areas to proceed.

.2 Cutting of holes up to 100mm in size in the existing structure and surfaces required by the trades shall be by those Subcontractors. Cutting and patching of openings greater than 100mm in size shall be by the Contractor in co-ordination with the trades. PATCHING OF ALL HOLES IN EXPOSED FINISHED SURFACES SHALL BE BY THE CONTRACTOR. Mechanical and Electrical trades shall do their own coring of existing slabs as required.

1.4 **BLOCKING UP OF EXISTING OPENINGS**

.1 At existing openings in walls shown to be blocked up, masonry shall be used to provide required ratings, unless otherwise noted.

1.5 **NEW OPENINGS IN EXISTING WALLS**

.1 Where new openings are shown to be cut into existing walls, provide new lintels over the opening and patch all adjacent materials. This includes new openings with lintels for Mechanical trade.

1.6 **EXISTING CEILINGS**

.1 All existing ceiling components and ceiling mounted fixtures and equipment shall be carefully removed as required for new services and reinstalled when work is complete.

.2 Any existing ceiling tiles, which are removed for services or new connections shall be replaced with new tiles. Existing tiles shall be turned over to the Owner's staff if in good condition. Transfer any markings for services from existing to new tiles.

.3 Where new walls are constructed, remove ceilings and grid and replace with new.

1.7 **FINISHES ON EXISTING FLOORS**

.1 Floors of existing building must be finished flush, ready for final finish in areas affected by the work.

.2 Existing concrete floors shall be prepared according to manufacturers instructions for new adhesive applied finishes.

.3 Existing floor finishes shall be removed and old adhesive removed from the existing concrete slab by scraping or solvent, in accordance with Health & Safety requirements. Grinding of floor finishes will not be accepted.

.4 Where new walls are being constructed, and new flooring is not called for in the Room Finish Schedule, remove floor finish below wall to extent required for work, unless indicated otherwise on drawings. Only full tiles are to remain. Where there is a floor pattern in the room, remove sufficient tiles/flooring to replicate the pattern. Provide new floor finish to match existing, including accent tiles where applicable.

1.8 **GENERAL NOTES**

.1 Junction of different floor finishes shall occur on centre line of doors.

.2 All masonry and drywall shall be extended to u/s of deck. Where walls run parallel and under steel joists the joists shall be enclosed both sides with gypsum board to provide sound barrier between rooms. Fill with minimum 100 mm batt insulation.

.3 All exposed concrete floor surfaces to be finished with sealer as specified.

.4 All exposed concrete block corners shall be bullnose block.

.5 Hardware shown on Door Schedule refers to code requirements only. Refer to Hardware Schedule for total hardware required.

.6 H.M. doors and frames shall be prepared for security alarm devices (S.A.D.) and barrier-free automatic door operators, as applicable.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 GENERAL

.1 Conduct cleaning and disposal operations to comply with local ordinances, anti-pollution laws, and recommendations of Construction Safety Association.

.2 Store volatile wastes in covered metal containers, and remove from premises daily.

.3 Prevent accumulation of wastes which create hazardous conditions.

.4 Provide adequate ventilation during use of volatile or noxious substances.

.5 Provide instructions designating proper methods and materials to be used in final cleaning of Work.

.6 Do not bury or burn any rubble, waste or packaging, or surplus materials. No dumping of waste, such as oil or paint, into sewers will be permitted.

### 1.2 MATERIALS

.1 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

### 1.3 POLLUTION CONTROL

.1 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads. Remove mud deposited on public roads. Provide mud mats at all site access roads.

.2 Prevent dust nuisance to adjacent properties, existing school, and general public by taking appropriate pollution control measures as directed by Consultant.

.3 Include daily watering of site to maintain dust control as part of tender submission.

### 1.4 DISPOSAL OF WASTES

.1 Burying of rubbish and waste materials on Site not permitted.

.2 Disposal of waste or volatile materials, such as mineral spirits oil or paint thinner into storm or sanitary sewers prohibited.

.3 Meet Ministry of the Environment Standards and Guidelines.

### 1.5 FIRES

.1 Fires and burning of rubbish on Site is not permitted.

## 1.6 CLEANING DURING CONSTRUCTION

.1 Maintain entire site and adjoining municipal and/or private property free from accumulations of waste materials and rubbish. Do not allow rubbish to accumulate in work under construction or on roofs. Clean site daily.

.2 Maintain entire site free from accumulations of snow and ice.

.3 Provide on-site containers for collection of waste materials, and rubbish. Empty containers on a regular basis in conformance with Municipal and Provincial Regulations.

.4 Cleaning operations shall include those areas used for temporary site access or used on a temporary basis to facilitate the Work.

.5 Broom clean and vacuum areas as required for application of finishes. Continue to clean on an "as needed" basis and insure that areas which receive paint, floor tile and other critical finishes are kept dry, dust free, and at acceptable temperatures.

.6 Keep all areas of the Work clean and orderly, free from accumulation of dirt, debris, garbage, oily rags, excess material, or such other trash items. Remove such items from all areas of the Work on a daily basis.

.7 Vacuum and/or broom interior building areas when ready to receive painting and other finishes. Continue cleaning on an "as needed" basis until the building is ready for inspection and take-over.

.8 Schedule cleaning operations so that resulting dust and other contaminants do not affect wet, newly painted surfaces, or newly installed equipment, or devices.

## 1.7 CLEANING AT COMPLETION OF WORK

.1 In addition to the progressive removal of rubbish from the entire building and Site, and leaving the buildings broom clean, the Contractor shall perform the following work in preparation for Substantial Performance.

.2 Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials from all exposed interior and exterior finishes, including glass and other polished surfaces. Clean glass both sides, and replace broken glass. Vacuum inside all cabinets and drawers and leave millwork ready for use. Remove paint spots and smears from all surfaces, including hardware.

.3 Remove stains, spots, marks and dirt from decorated work, electrical and mechanical fixtures, and the like. Remove protective materials.

.4 Remove all protective film from switchplates and hardware, particularly kick plates. Clean hardware, aluminum, stainless steel and the like.

.5 Clean resilient and sheet flooring and all floor and wall tile.

.6 Clean lighting reflectors, lenses and other lighting surfaces.

.7 Remove debris and surplus materials from the roof areas and accessible concealed spaces.

.8 Replace heating, ventilation and/or air conditioning filters at Substantial Performance, whether or not the units were operated during construction operations.

.9 Vacuum clean all building interiors affected by construction operations before occupancy.

.10 Broom clean paved surfaces and rake clean other disturbed surfaces in the area of the Work, to remove site debris caused by the Work of this Contract. Inspect for damages and make good.

.11 Clean all exterior walkways, driveways and the like. Remove snow from walks and paved areas if necessary, prior to occupancy.

.12 Conduct final inspection of interior and exterior surfaces, and concealed spaces.

.13 Leave premises ready for immediate occupation without further cleaning, all to the Consultant's approval.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 TAKEOVER PROCEDURE

.1 Subject to detailed instructions included in these specifications, conform to OAA/OGCA document 100, Take-Over Procedures.

### 1.2 OCCUPANCY REQUIREMENTS

.1 Review occupancy with the building inspector well in advance of required occupancy date, and ensure that the requirements are met for occupancy, including all document submissions. Refer also to Section 01 41 00, Regulatory Requirements.

.2 An occupancy permit is required for any project that is not deemed complete prior to the date of occupancy.

.3 Refer to OBC Division C, section 1.3.3, Occupancy of Buildings, for occupancy requirements. The designated building official is required to issue an occupancy permit only under the conditions outlined therein. Generally, these conditions include the following:

- .1 Completion of building structure and walls to the roof, including any balcony guardrails;
- .2 Completion of all required fire separations and closures in all areas to be occupied;
- .3 Completion of all required exits and fire separations, including all doors and hardware, guardrails and handrails, and exit signs, at all levels of floor areas to be occupied;
- .4 Completion of all shafts to rated assemblies above occupied area, complete with fire separations.
- .5 Completion of building drains, sewers, water systems, drainage systems and venting systems, including testing for areas to be occupied;
- .6 Completion of HVAC, power and lighting for all areas to be occupied, including emergency lighting;
- .7 Completion of fire safety systems for areas to be occupied, including sprinklers, standpipe, fire extinguishers, fire alarm system, and exterior fire route;
- .8 Provision of service facilities, including garbage rooms, service rooms, complete with required fire separations;
- .9 Maintenance of egress routes to and from areas to be occupied, keeping them free of materials that could present hazards to access; and
- .10 Secure and safe separation of areas to be occupied from areas that are incomplete and not to be occupied.

.4 In addition to the OBC requirements for occupancy, the spaces must be complete for the purposes of occupancy by the Owner.

.5 The issue of an occupancy permit shall not imply Substantial Performance of the Contract. Determination of Substantial Performance is defined by lien legislation.

### 1.3 ACTION REQUIRED AT OCCUPANCY

.1 When of the opinion that the Occupancy Requirements have been met, perform an inspection of the work, accompanied by the major subcontractors. Submit an inspection report, confirming that the occupancy requirements have been met, to the Consultant and the Owner.

.2 Arrange for and pay related fee for all necessary inspections required for occupancy such as Hydro, Fire Department and Building Department.

.3 Confirm with the building inspector that the occupancy requirements of the municipality have been met, and submit evidence of such to the Consultant and Owner.

.4 Next, arrange for a review of the Work with the Consultants and Owner. The Consultant will determine whether the Work is Fit for Occupancy.

.5 Request letters confirming General Review from Consultant, and Structural, Mechanical and Electrical Engineers, for submission to Authorities Having Jurisdiction.

.6 Upon receipt of the required documents, confirm that occupancy of the Work is accepted by the Authorities Having Jurisdiction. Submit evidence of the permission for occupancy to the Consultant and Owner.

.7 When partial occupancy of uncompleted project is required by the Owner, co-ordinate the Owner's uses, requirements and access with the construction requirements to complete project.

1.4 **ACTION REQUIRED AT SUBSTANTIAL PERFORMANCE**

.1 Perform the actions listed below prior to issue of the Certificate of Substantial Performance of the Contract.

.2 Submit the documents and material detailed in section 01 78 00, Closeout Submittals. Deliver all required submittals to the Consultant for approval PRIOR to Substantial Performance of the Work. Final payment will not be made until all these items have been received and approved.

.3 Prior to applying for a Certificate of Substantial Performance, perform an inspection in accordance with OAA/OGCA Document 100, Stage 2, Contractor's Inspection for Substantial Performance. Submit a copy of the deficiency list to the Consultant.

.4 Ensure all sub-systems ie fire alarm, security, E.M.S., are fully operational prior to Substantial Performance.

.5 When of the opinion that the requirements for Substantial Performance have been met, submit an application for a Certificate of Substantial Performance to the Consultant. The application shall be as outline for Stage 3 of the OAA/OGCA Take-Over Procedures.

.6 Expedite and complete deficiencies and defects identified by the Consultant. Final Certificate for Payment will not be issued until all deficiencies are satisfactorily corrected, inspected, and approved by the Consultant, and all documentation has been handed to the Consultant.

.7 Remove all protection erected, and make good all damage to the Work and adjoining Work due to the lack or failure of such protection. In addition, all debris, surplus materials tools equipment shall be removed from the work areas and the site, and the Project shall be left clean and tidy to the full and complete satisfaction of the Consultant and Owner.

.8 Perform final adjustment of Cash Allowance, specified in Section 01 10 00, General Instructions.

.9 Arrange for Consultant to prepare CAD drawing files for the Board using the final as-built drawings.

.10 At time of Substantial Performance, instruct the Owner's personnel in operation, adjustment and maintenance of equipment and systems, using operation and maintenance manuals as the basis for instruction.

.11 Prior to final site review, start up and demonstrate operation of all systems to the Owner and the Consultant.

.12 Review cash and contingency allowances in relation to contract price, change orders, hold-backs and other contract price adjustments.

.13 Review inspection and testing reports to verify conformance to the intent of the documents.

.14 Review condition of all equipment, which has been used in the course of the Work to ensure turnover at completion in "as new condition" with warranties, dated and certified from time of Substantial Performance of the Contract.

.15 When partial occupancy of uncompleted project is required by the Owner, co-ordinate the Owner's uses, requirements and access with the construction requirements to complete project.

.16 Provide on-going review, inspection, and attendance to building call back, maintenance and repair problems during the warranty periods.

.17 Continue to submit monthly deficiency status reports, as specified in Section 01 32 00, Construction Progress Documentation.

1.5 **TOTAL PERFORMANCE**

.1 Upon completion of all items noted on the deficiency list, clean all areas, surfaces, and components affected by corrections and completion of deficient items.

.2 Ensure that all services, equipment, and apparatus are properly tested and adjusted.

.3 Letter of Completion:

.1 Submit a Letter of Completion to the Consultant stating that the Contract is complete, that all deficiencies identified by the Consultant, Subconsultants, Inspectors and Owner have been rectified, and requesting final reviews by Consultant and Subconsultants.

.2 Sign and return deficiency lists, issued by Consultant and Subconsultants, to confirm completion of all deficiencies identified thereon.

.4 Final Site Review:

.1 Consultant will conduct one site review for Total Performance, within ten (10) working days of the request by the Contractor. Should the Contractor fail to provide the Letter of Completion, the Consultants will be under no obligation to perform a site review within the above noted time.

.2 Additional site reviews, as requested by the Contractor or as necessitated due to the Contractor's failure to complete work as required, shall be paid for by the Contractor at a rate of **$500 per visit**, per consultant, plus the cost to prepare additional site review reports at per diem rates (rates as recommended by the OAA or PEO, or as negotiated in advance).

.5 Submit a final request for payment, incorporating all approved changes to the Contract price, and adjustments to the Cash Allowance.

.6 Final Certificate for Payment will not be authorized until all deficiencies are satisfactorily corrected, reviewed and signed off by the Consultant, and required submittals have been completely and accurately provided.

1.6 **WARRANTY PERIOD**

.1 The Warranty Period on this Project will expire **twelve (12) months** from the date of Substantial Performance of the Work, except for extended warranties as called for throughout the Specifications or equipment not certified by Consultant at time of Substantial Performance.

1.7 **UTILITY CHARGES**

.1 The Owner will assume responsibility for utility service billing from day following date of Substantial Performance, or on day of occupancy of building by Owner, whichever is earliest.

.2 Contractor to arrange for reading of meters at this time.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 SUBMITTALS REQUIRED FOR OCCUPANCY

.1 Refer to Section 01 41 00, Regulatory Requirements for documents required to be submitted to Authorities having Jurisdiction, for occupancy.

### 1.2 SUBMITTALS REQUIRED AT SUBSTANTIAL PERFORMANCE

.1 Prior to Substantial Performance of the Contract, perform the actions detailed in section 01 77 00, Closeout Procedures, and submit the following documents and materials:

.1 Deficiency list prepared by Contractor for both interior and exterior areas of the project.

.2 Certificates of good standing from the Workplace Safety & Insurance Board for the Contractor and all Subcontractors

.3 Operations and Maintenance Manuals, including warranties

.4 One complete set of final approved Shop Drawings (bound separately) indicating corrections and changes made during fabrication and installation

.5 Keys and construction cores

.6 Maintenance materials

.7 As-Built Documents as specified in Section 01 33 00, Submittal Procedures

.2 Deliver all required submittals to the Consultant for approval prior to Substantial Performance of the Work. Final payment will not be made until all these items have been received and approved. These submittals include:

### 1.3 MAINTENANCE MANUALS

.1 At Substantial Performance submit to Consultant one hard copy and one digital copy of Architectural, Mechanical, and Electrical Operations Data and Maintenance Manuals made up as follows:

.1 Bind data in vinyl hard covered, three-ring loose leaf binders for 212.5mm x 275mm (8-1/2" x 11") size paper. Digital copy shall be submitted in pdf (portable document format) on a single USB flash drive with label or tag identifying project.

.2 Enclose title sheet, labelled "Operation Data and Maintenance Manual - Architectural", ELMVALE DISTRICT HIGH SCHOOL - FAMILY STUDIES KITCHEN RENOVATIONS, date and list of contents. Include the following information:

.1 name of project
.2 name of Owner
.3 name of Consultant
.4 name of Contractor

.5 date of Substantial Performance.

.3 Organize contents into applicable sections of work to parallel project specification break-down. Mark each section by labelled tabs protected with celluloid covers fastened to hard paper dividing sheets.

.4 All data related to a section of work or product shall be grouped together, except for shop drawings, unless otherwise requested by the Owner. Confirm method of organization with Owner prior to assembling manuals. Typically, each section shall be organized, as applicable, as follows:

.1 General information; identify section of work, subcontractor(s) responsible
.2 Warranty
.3 Guarantees, Bonds
.4 Schedules (hardware, paint)
.5 Product data sheets
.6 Material safety data sheets (MSDS)
.7 Operating manual
.8 Maintenance instructions
.9 Receipts for maintenance materials, keys, etc.,
.10 Maintenance contracts
.11 Inspection and testing reports

.2 Provide one copy of each of the following in the first binder:

.1 Contractor’s final statutory declaration on CCDC form 9A-2001
.2 Major Subcontractor’s final statutory declarations on CCDC form 9B-2001
.3 Workers' Compensation and Insurance Board (WSIB) certificate
.4 Certificates of approval of the work by the Building Department (if available)
.5 Hydro certificate of inspection.

.3 Also provide a disk or memory stick containing all construction progress photos submitted; refer to Section 01 32 00. Provide an index with printed images clearly identified with name of project, description of view and date taken. Disks are to be clearly labelled .

.4 Include the following information, plus any additional data required within the specifications.

.1 List of all Subcontractors, major suppliers, and local equipment service representatives, their addresses and telephone numbers.

.2 Date of Substantial Performance (commencement of warranty periods) and termination dates of warranties.

.3 Operating manuals to keep all equipment in good working order. Reviewed shop drawings of same.

.4 Door and Frame Schedule (as-built); insert in front of Division 08 section in manuals.

.5 Final hardware schedule, revised to include all changes during construction, including local manufacturer's descriptive and service literature. Include AHC’s final inspection report.

.6 Final finish/colour schedule; insert in front of Division 09 section in manuals.

.7 Provide paint schedule indicating paint brand and formulas used.

.8 Maintenance instructions for all types of floor finish and other special finishes. Include instructions for cleaning, repairing, refinishing and freshening, and warnings of damaging or dangerous practices where necessary.

.9 Maintenance and service instructions and manufacturer's literature for all special architectural features: i.e. windows, patent glazing, handicapped lift etc.

.10 Description, operations and maintenance instructions for equipment and systems, including complete list of equipment and parts list.

.11 All warranties, guarantees, bonds, etc., properly completed and signed, which extend beyond the general warranty period, for all work and equipment as specified or as otherwise supplied and installed, from manufacturers and trades. Warranties, guarantees and bonds shall include:

.1 Name and address of project.
.2 Warranty commencement date.
.3 Duration of warranty.
.4 Clear indication of what is being warranted and what remedial action will be taken under warranties.
.5 Signature and seal of Contractor.

.5 List additional material used in project showing name of manufacturer and source of supply.

.6 Neatly type lists and notes. Use clear drawings, diagrams or manufacturer's literature.

.7 Supply copies of inspection and testing reports, inspection and acceptance certificates, balancing reports, all bound in all three copies of manuals.

.8 Supply Operations and Maintenance manuals, and other required documentation as specified for Mechanical and Electrical work.

.9 Manuals must bear seal and signature of Contractor.

.10 Maintenance Manuals must be delivered, complete and in one package, to Consultant. The final Certificate for payment will not be issued until ALL documentation has been received, reviewed, and approved, by Consultant.

1.4 **SHOP DRAWING MANUAL**

.1 Provide one complete set of final approved Shop Drawings, bound separately. Shop drawings shall be the drawings reviewed and stamped by the consultants. Mark-up shop drawings to indicate corrections and changes made during fabrication and installation.

.2 Provide a digital copy of the shop drawing manual, included on the USB flash drive with the digital copy of the maintenance manuals.

1.5 **MAINTENANCE MATERIALS**

.1 Where supply of maintenance materials is specified, deliver items as follows:

.1 Materials in unbroken cartons or, if not supplied in cartons, they shall be strongly packaged.

.2 Clearly mark as to content.

.3 If applicable give colour, room number of area where material used.

.4 Obtain signed receipt from the Owner's designated representative and store in an assigned, lockable room.

.2 Copies of signed receipts for maintenance materials are to be included in the maintenance manuals.

.3 Replacement materials are for the sole use of the Owner and must not be used by Contractor to replace deficient work.

1.6 **AS-BUILT DRAWINGS AND RECORD DOCUMENTS**

.1 Provide As-Built Drawings, as specified in Section 01 33 00, and Record Documents (electronic files).

.2 Prior to the date of Substantial Performance, request updated drawings from the Consultant. Transfer all "as-built" markups from the on-site drawings to these updated drawings and return them to the Consultant for preparation of architectural Record Drawings.

.3 Record documents shall consist of the original documents altered to reflect all changes and information indicated on as-built documents.

.4 The Consultant shall prepare architectural Record documents and be reimbursed for costs by the Contractor through the Cash Allowance included in the Contract.

.5 Refer to Mechanical and Electrical Specification Divisions for specific requirements regarding preparation and submission of final mechanical and electrical Record Drawings.

1.7 **REVIEW OF MANUALS BY CONSULTANT**

.1 Submit all manuals for review by the Consultant. Mechanical and electrical manuals may be forwarded directly to the consulting engineers for review.

.2 The Contractor is responsible for confirming the completion of the manuals prior to forwarding to the Consultant for review. If any items are outstanding, provide tabs at the appropriate locations and indicate the nature of the outstanding documents to be inserted.

.3 Do not submit partially complete manuals to the Consultant; only documents which cannot be provided at the time of Substantial Performance are permitted to be flagged for later insertion. The Consultant will review manuals once for completion and will then review only one resubmission. If additional reviews are required, the Contractor will be invoiced for the Consultant's time at a rate of $100/hour.

1.8 **VALUATION OF CLOSEOUT SUBMITTALS**

.1 Due to the high value to the Owner of the closeout submittals, including maintenance manuals, for the purpose of project administration and calculation of Substantial Performance, the Closeout Submittals will be assigned a value of **$5,000.00**.

.2 The full assigned value of the submittals will be held in the Contract until such time as all closeout submittals are delivered to the Consultant and are deemed complete and acceptable by the Consultant.

.3 Architectural record drawings, to be prepared by the Consultant and paid through the Cash Allowance, are not included in the valuation of closeout submittals.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 GENERAL

.1 Test methods used to determine fire hazard classification and fire endurance rating shall be as required by Ontario Building Code.

.2 Upon request, furnish the Consultant with evidence of compliance to fire protection requirements as noted in documents or specified codes, etc.

.3 Materials and components used to construct fire rated assemblies and materials requiring fire hazard classification shall be listed and labelled, or otherwise approved, by fire rating authority. Labelled materials and their packaging shall bear fire rating authorities label showing product classification.

.4 Fire and time rated door assemblies shall include doors, frame, anchors, and hardware and shall bear label of fire rating authority showing opening classification and rating.

.5 Construct fire rated assemblies in accordance with applicable fire test report information issued by fire rating authority. Deviation from fire test report will not be allowed.

.6 Construct fire rated assemblies as continuous, uninterrupted elements except for permitted openings. Extend fire rated walls and partitions from floor to underside of structural deck above.

.7 Materials which have a fire hazard classification shall be applied or installed in accordance with fire rating authority's printed instructions.

.8 Provide firestopping as specified in Section 07 84 00.

.1 Firestopping shall be a tested system consisting of non-combustible materials, smoke sealant, and means of support, used to fill gaps between fire-rated separations or between fire separations and other assemblies, and used around items that penetrate a fire separation.

.2 Fill and patch voids and gaps around openings and penetrations in and at perimeter of assemblies so as to maintain continuity and to produce a fire resistant, smoke tight seal, acceptable to jurisdictional authorities.

.9 Provide fire blocks to compartmentalize concealed spaces as required by the OBC.

.1 Fire block means a material, component or system that restricts the spread of fire within a concealed space or from a concealed space to an adjacent space.
.2 Fire blocks are also referred to as fire stops in the OBC.

.10 The Contractor shall ensure that all fire safety features called for in the Contract Documents are supplied and installed to meet fire safety standards established by those authorities having jurisdiction. The Contractor shall ensure that the work of Subcontractors is properly coordinated to achieve the intent of this Specification.

.11 Nothing contained in the Drawings or Specifications shall be construed as to be in conflict with any law, by-law, or regulations of municipal, provincial, or other authorities having jurisdiction. Work shall be performed in conformity with all such laws, by-laws, and regulations.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 RELATED WORK

| | | |
|---|---|---|
| .1 | Hazardous Materials | Section 01 35 43 |
| .2 | Temporary Barriers and Controls | Section 01 56 00 |
| .3 | Execution | Section 01 73 00 |
| .4 | Cast-in-place concrete | Section 03 30 00 |
| .5 | Concrete block | Section 04 22 00 |
| .6 | Flooring Restoration | Section 09 01 61 |
| .7 | Gypsum Board | Section 09 29 00 |
| .8 | Painting | Section 09 90 00 |

### 1.2 REFERENCES

.1 Conform to all laws, By-Laws and regulations of the authorities having jurisdiction and, in particular, the Ontario Occupational Health and Safety Act; The Environmental Protection Act; The Ontario Building Code, (Ontario Reg. 332/12); The Ontario Fire Code; The National Building Code, 2010; and the National Fire Code. Refer to current editions of all standards.

.2 CSA S350-M, code of practice for safety in demolition of structures.

.3 Environmental Protection Act, R.S.O. 1990, C. E.19, and regulations under the Act, including:
- .1 O.Reg. 102/94 Waste Audits and Waste Reduction Work Plans
- .2 O. Reg. 103/94: Industrial, Commercial And Institutional Source Separation Programs
- .3 R.R.O. 1990, Reg. 347: General - Waste Management

.4 Occupational Health and Safety Act, and regulations under the Act, including:
- .1 O.Reg. 213/91 Construction Projects
- .2 O.Reg. 278/05, Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations amended 479/10.
- .3 O.Reg. 860/90 Workplace Hazardous Materials Information System (WHMIS)
- .4 All regulations regarding “Designated Substances”

.5 Regulations for the transport of asbestos waste, including:
- .1 Transportation of Dangerous Goods Act, 1992 (1992, c. 34)
- .2 Dangerous Goods Transportation Act, R.S.O. 1990, c. D.1

.6 Resilient Floor Covering Institute (RFCI)
- .1 Recommended Work Practices for Removal of Resilient Floor Coverings.

### 1.3 EXAMINATION OF EXISTING SITE AND STRUCTURE

.1 Examine the existing site and building before tendering to be familiar with the detailed extent of demolition, dismantling, relocation and reassembly required.

.2 An assessment of hazardous building materials has been conducted for the existing building; a copy of which is included in the Supplementary Information volume. Review report to determine extent of hazardous materials which may be present in the areas affected by the work of this project and provide for removals of same by trained forces.

.1 Should workers uncover materials which they suspect may contain asbestos, which are not identified in the hazardous materials assessment report provided, the Contractor shall cease work in that area and contact the Owner for further direction. A Cash Allowance is included in the Contract to pay for any additional abatement work which may be required.

.3 No allowance will be made for failure to obtain complete information prior to close of tenders.

1.4 **SUMMARY OF WORK**

.1 Carry out all demolition, cutting and removal of existing work in preparation for the construction of the new work.

.2 Carry out all alteration and demolition work required to accommodate new work indicated on drawings. Make good any damage caused by alterations required.

.3 Repair or replace existing damaged surfaces scheduled to be repainted. Finished surfaces to be ready for finish painting.

.4 Remove HVAC equipment, electrical fixtures and all other items so noted on drawings as required, unless otherwise noted.

.5 Unless noted otherwise, building materials resulting from demolition under this contract shall become the property of the Contractor, and shall be removed by the Contractor.

.6 Remove, transport, and dispose of hazardous materials in accordance with applicable laws. Removal of asbestos containing materials is to be undertaken by forces trained in accordance with the requirements of O.Reg. 278/05 under the direction of a Hazardous Materials Consultant retained by the Owner.

.7 Supply and install temporary dust proof partitions in corridors and doors at junctions with new addition. Dust proof partitions shall be erected outside of school operating hours and shall remain in place until work is fully commissioned and accepted by the Owner.

1.5 **SCHEDULE OF WORK**

.1 Student safety and required exiting from the existing school must be maintained al all times, particularly during the school's operating hours and scheduled events. Work must be suspended if the Principal advises that noise, dust, or odours are interfering with the school program.

.2 Construction fence must be installed and construction area secured before any work is undertaken. Enclosure must conform to Ministry of Labour and Municipal requirements as well as these specifications.

.3 Dust proof partitions, and other dust proofing measures, must be installed prior to any work being undertaken.

.4 The intention is that all work will be carried out during summer closure of the school.

1.6 **PROTECTION**

.1 Protect all existing paving and site amenities not designated for removal. Make good damage to the approval of the Consultant.

.2 Prevent movement, settlement, and damage to existing building to remain, services, paving, landscaped areas to remain, and adjacent structures. Provide temporary supports, including shoring and bracing, as required. All shoring must be designed by a professional engineer licenced in the Province of Ontario.

.3 Protect adjacent properties against damage which might occur from falling debris or other cause. Make good damage to adjacent public or private properties resulting from Work of this Contract.

.4 Protect existing building from damage and contamination during demolition activities. All openings must be made weatherproof. Provide temporary barriers, dust control measures, security controls, supports, and such additional protection as may be required by specific demolition work. Cover existing windows, doors, louvres, etc., opening to construction areas with minimum 16mm Type X gypsum board on steel stud framing to prevent exposure to construction activities.

.5 Dust proof partitions shall consist of 92mm steel stud framing to the underside of deck with one layer of 13mm plywood sheathing covered by 10 mil polyethylene sheet caulked all around the partition covered by two layers of 16mm Type X gypsum board with off set joints taped and filled, providing minimum 3/4 hour fire separation. The gypsum board will be painted with two coats of good quality white paint. Where access is required through partition, provide a solid core wood door or hollow steel door, in steel frame, equipped with self-closing and latching hardware.

.6 Employ licensed rodent and vermin exterminators to destroy all discovered vermin and rodents.

.7 Remove contaminated and dangerous material from the site and dispose of safely and legally. Meet all M.O.E. requirements, plus regulations referenced above.

.8 During site demolitions operations, keep work wetted down to prevent dust and dirt from rising. Provide water line for this purpose, furnish connections that may be required. Upon completion, remove installed temporary water lines.

.9 Take precautions to guard against movement or settlement of adjacent land, existing building, and remaining services and utilities. Provide and place bracing or other means of support.

.10 Take precaution against contamination of air and adjacent properties.

1.7 **MAINTAINING FIRE SAFETY IN EXISTING BUILDING**

.1 Maintain all required exiting for safe operations within the existing building. Where an exit is closed off due to construction activities, provide alternate exit acceptable to both the Consultant and to Authorities Having Jurisdiction. If access to exit must be through an area under construction, provide smoke tight enclosure with minimum 45minute fire resistance rating. Any temporary exits must be clearly identified with appropriate signage.

.2 Maintain access roadways for fire department vehicles, acceptable to the fire department. Access must be approved prior to commencement of construction activities.

.3 Store all combustible materials in accordance with the Fire Code and the Occupational Health and Safety Act. Do not store combustible materials within the existing building or against the building. All combustibles shall be stored in a manner which minimizes risks to building and occupants.

.4 Maintain dust proof partitions and protection at openings, as specified above, with fire separation ratings as required by Authorities Having Jurisdiction.

.5 Maintain fire alarm system in operating condition in existing building. Notify the fire department, Owner, and school principal of any temporary shutdowns of service and provide alternative measures during such periods of time.

.6 Coordinate with Owner and Authorities Having Jurisdiction for all changes to fire emergency procedures as may be required during construction.

1.8 **SERVICES**

.1 Seal and cap mechanical and electrical services in order to facilitate removals indicated on drawings. Mark location and type of service of all capped services at the site. Submit record drawing showing locations and dimensions of all capped services.

.2 Include cost to X-Ray concrete floors and walls to determine locations of buried or hidden services.

## PART 2 - PRODUCTS

2.1 Not Used

## PART 3 - EXECUTION

### 3.1 DEMOLITION

.1 Refer to drawings for demolition plans and notes.

.2 Refer to Hazardous Building Materials Assessment report, included as Supplementary Information, and provide removal of identified hazardous materials in work areas, by trained forces, prior to commencing general demolition work in those areas.

.1 Ensure building remains water tight. Coordinate timing of removal of exterior caulking/sealant with forces installing new sealants, or provide temporary sealant and remove in advance of new sealant work.

.3 Cut and remove concrete floor slab as required to accommodate new work.

.4 Remove glass, metals and combustible materials from walls being demolished.

.5 Remove mechanical and electrical equipment and piping and similar materials, as required on drawings and to facilitate the new work.

.6 Any items noted to be re-used or re-located are to be removed carefully, packaged appropriately, and handed over to Contractor.

.7 Upon discovery of mould or mouldy materials remove and dispose of these separately.

.8 At the end of each day's work, leave work in a safe condition so that no part of the remaining structure is in danger of collapse.

.9 Do not burn any refuse or debris at the site.

.10 Remove all necessary trees, shrubs and all stumps, brush and perishable matter. Tree stumps shall be removed sufficiently so that they may not constitute a later obstruction to services and underground work and may not cause settlement of paved areas. Refer also to section 31 10 00, Site Clearing.

### 3.2 REPAIRS TO EXISTING WALLS

.1 Repair damage to existing walls in areas scheduled to be repainted, where damage is to substrate, not just the coating. Repairs to deteriorated coatings are specified in Section 09 92 00. Repair masonry surfaces with patching compounds and fillers.

### 3.3 REMOVAL OF EXISTING FLOOR FINISHES

.1 Existing floor finishes shall be removed and old adhesive removed from the existing concrete slab by wet scraping, and in accordance with Health & Safety requirements. Use of solvents, or grinding of floor finishes will not be accepted.

.2 Existing concrete floors shall be prepared according to manufacturer’s instructions for new adhesive applied finishes.

.3 Remove all adhesive containing hazardous materials as directed by Abatement Consultant.

.4 Repair damaged areas of concrete floors by use of patching compounds and fills. Refer to Section 09 01 61 for flooring restoration.

.5 Protect existing flooring, to remain, from damage.

3.4 **REMOVAL OF CEILINGS**

.1 Remove existing ceilings and bulkheads in areas where new ceilings and bulkheads are indicated, and as shown on drawings.

.2 Ceilings to be demolished shall be removed complete with all finishes, framing, suspension system, trim, and accessories.

.3 Where ceilings are to be removed to accommodate work, and later reinstalled, carefully disassemble ceilings to the extent required. Clean all components, wrap for protection, clearly label package contents, and store in a safe location until they are to be reinstalled.

.4 Where ceilings are to remain after adjacent walls or bulkheads are demolished, remove ceiling components as required to complete demolition work. Coordinate with forces doing new ceiling work, to confirm what components are to be retained for reuse. Cut ceiling tiles may not be used; new full or appropriately cut tiles will be required.

.5 Where ceiling mounted equipment is indicated to be removed and reused, or where it must be temporarily removed to accommodate the Work, it is to be carefully removed, cleaned, wrapped, labelled as to contents, and stored in a safe location, ready for reinstallation.

.6 Repair damaged gypsum board ceilings to remain, in renovated areas, to level ready for finish painting.

3.5 **MECHANICAL AND ELECTRICAL WORK**

.1 Mechanical and Electrical services must be temporarily capped or terminated to permit renovation in existing areas to proceed.

.2 Refer to drawings for the extent of removals, relocations, and alterations required.

.3 Ceiling mounted mechanical and electrical equipment which is to be removed and reused is to be carefully removed and stored as specified above.

3.6 **COMPLETION OF WORK**

.1 Remove all surplus materials, equipment and rubbish from the site.

.2 Leave site in condition to meet approval of the Consultant.

.3 On completion of Demolition work, thoroughly clean all existing surfaces to remain, including ceiling space. No debris or dirt shall remain to be enclosed by new construction.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 WORK INCLUDED

.1 Supply and installation of new concrete slab on grade construction in location of the work.

### 1.2 GENERAL REQUIREMENTS

.1 Conform to the General Requirements and Special Conditions contained in Division 01.

.2 Comply with the requirements of the Ontario Building Code Act, and the Occupational Health and Safety Act and Regulations for Construction Projects.

.3 Keep a copy of the Ontario Building Code and the Occupational Health and Safety Act handbook in the project field office.

### 1.3 CO-ORDINATION

.1 Be responsible for the supply of all material and labour required to the completion of the Contract. Breakdown of work into units by trade is for guidance only and is not necessarily complete.

.2 Products Furnished But Not Installed Under This Section:
- .1 Concrete and reinforcing to Masonry Trade.

.3 Products Installed But Not Furnished Under This Section:
- .1 Anchor bolts.
- .2 Anchorage assemblies and weldments for other structural trades.
- .3 Members, inserts, sleeves, boxes and embedded items required to be built into, anchored to, or passing through concrete work and which is specified for supply in the work of other sections.
- .4 Shelf angles and wall plates connected to concrete.

### 1.4 REFERENCE STANDARDS

| | | |
|---|---|---|
| .1 | CSA-A23.1/A23.2 | Concrete Materials and Methods of Concrete Construction Methods of Test and Standard Practices for Concrete |
| .2 | CSA W186 | Welding of Reinforcing Bars in Reinforced Concrete Construction |
| .3 | CSA W47.1 | Certification of Companies for Fusion Welding of Steel |
| .4 | CSA W178.1 | Certification of Welding Inspection Organizations |
| .5 | CSA S269.1 | Falsework for Construction Purposes |
| .6 | CSA-S269.3 | Concrete Formwork |
| .7 | CAN/CSA-G30.18 | Billet-Steel Bars for Concrete Reinforcement |
| .8 | CAN/CSA-G164 | Hot Dip Galvanizing of Irregularly Shaped Articles |

.9 ACI 303.1 Guide to Cast-In-Place Architectural Concrete Practice

.10 Do concrete formwork in accordance with CSA-A23.1 and CSA-S269.3-M, except where specified otherwise.

.11 Do falsework in accordance with CSA S269.1, except where specified otherwise.

.12 Do reinforcing work in accordance with CSA A23.1/A23.2.

.13 Fabricate reinforcing to "Reinforcing Steel Manual of Standard Practice" by Reinforcing Steel Institute of Canada.

.14 Weld reinforcing steel in accordance with CSA W186-M, except where specified otherwise.

.15 Do cast-in-place concrete work in accordance with CSA A23.1/A23.2, except where specified otherwise.

.16 Do cast-in-place architectural concrete work in accordance with ACI 303.1.

.17 Use only current editions of all reference standards, as amended at date of issue of Contract Documents.

.18 Keep a copy of all reference standards in the project field office.

1.5 **DESIGN OF FORMWORK AND FALSEWORK**

.1 Retain a Professional Engineer to design formwork, and falsework, and to supervise their construction. Design all formwork and falsework to support construction loads and fluid pressures without overstressing the materials and without causing excessive deflection. Design formwork and falsework for architectural concrete such that deflection is limited to not more than 1/400th of the span of any element. Provide positive means of adjustment to permit realignment or readjustment.

1.6 **SHOP DRAWINGS - GENERAL**

.1 Submit shop drawings in accordance with Division 01.

.2 Review of shop drawings by the Consultant and Engineer is a precaution against oversight or error. It is not a detailed check and must not be construed as relieving the Contractor of responsibility for making the work accurate and in conformity with the Contract Documents. Design of items for which the Contractor is responsible under the Contract will not be reviewed. Work done prior to receipt of the reviewed drawings will be at the risk of the Contractor. Review comments are not authorization for changes to the Contract price.

.3 Make corrections required by previous review before resubmitting drawings. Do not make changes to drawings which have been reviewed without comment. Highlight or “bubble” any changes made to originally submitted documents. Indicate revision numbers on drawings.

.4 After review shop drawings will be returned stamped to show one of the following levels of acceptance:

.1 Reviewed: No comments
.2 Reviewed as Noted: Make corrections noted. Submit final record print.
.3 Revise and Resubmit: Correct and resubmit for review.

.5 Conform to the requirements of each authority that has reviewed the drawings.

.6 Allow a reasonable length of time for drawing review when preparing the project schedule. Coordinate with Consultant.

.7 Refer to additional requirements for shop drawings for Reinforcing Steel and Formwork, as noted below.

1.7 **SHOP DRAWINGS - REINFORCING STEEL**

.1 Submit to the Consultant for review, four (4) white prints of placing diagrams and bar lists. Each resubmission shall also include four (4) prints. Prints shall be of high quality, suitable for reproducing. Leave space on prints for the stamps of the Consultant and Structural Engineer. Check and sign before submission.

.2 Include plans, elevations, sections and bar lists necessary to show all reinforcing and to facilitate checking. **This includes all reinforcing steel in masonry walls, piers, and lintels.** Show location of construction joints and detail reinforcement at joints. Show bar sizes and spacing directly on the diagrams. Draw diagrams to a suitable scale with a minimum of 1:50 for plans and a larger scale for the remainder. See Drawings and Typical Details for concrete cover for reinforcing steel. Show specified cover on placing diagrams. Transparencies made from the Structural Drawings will **not** be accepted.

.3 Provide the office preparing shop drawings with a complete set of Contract Drawings and Specifications plus all addenda and revisions.

.4 Reinforcing steel shall be supplied and detailed by a member of the Reinforcing Steel Institute Canada. The Contractor's staff or other detailing firm may prepare the drawings, provided the work is under the supervision of a Professional Engineer whose seal shall appear on the drawings.

.5 Conform to CSA Standards and RSIC Manual of Standard Practice unless the Contract Documents contain a more stringent requirement, in which case the latter shall govern. Provide accessories as required by the Manual.

.6 Do not release shop drawings for reinforcing bars whose length may be affected by field conditions, such as the final elevation of footings, until such time as the governing field dimensions have been ascertained, and affected reinforcing bar lengths are revised.

.7 If shop drawings are required to be revised and resubmitted, make corrections required by previous review before resubmitting. Highlight or “bubble” any changes made to originally submitted documents.

.8 Keep on site at all times a set of shop drawings bearing the review stamps of the Consultant and Engineer. Use only these drawings and the Structural Drawings to set reinforcing steel. Prepare as-built drawings by neatly marking on the Structural Drawings revisions issued during the course of construction as soon as they are received.

.9 Check shop drawings against the complete set of project documents as soon as available, even if after contract drawings have been issued for this Trade, in order to determine if additions or revisions are required to complete the work. Report results of check to the Consultant.

1.8 **SHOP DRAWINGS - FORMWORK**

.1 Submit for review before the start of work, four (4) good quality white prints of formwork drawings. Check and sign before submission to the Consultant.

.2 Show on formwork drawings complete construction details for the following:
- .1 Shoring, scaffolding and bracing.
- .2 Reshoring sequences.
- .3 Rate of concreting for which formwork is designed.
- .4 Material specifications and loadings.
- .5 Cambers and method of form alignment.
- .6 Typical sections of each type of architectural concrete construction showing form tie locations, arrases, chamfer, reveals, etc.
- .7 Control, construction and expansion joints, showing all joint locations.
- .8 Panel jointing, caulking and taping.
- .9 Reglets and inserts.

.3 Provide the office preparing shop drawings with a complete set of Contract Drawings and Specifications plus all addenda and revisions.

.4 Comply with CSA S269.1 for falsework shop drawings.

.5 Shop drawings shall bear the seal and signature of a Professional Engineer licensed to practice in the Province of Ontario.

.6 Allow a reasonable length of time for drawing review when preparing the project schedule. Coordinate with the Consultant.

1.9 **QUALITY CONTROL SUBMITTALS**

.1 Retain and pay for the services of an independent concrete testing agency, acceptable to the Consultant, to review proposed concrete mixes and to report the results to the Consultant. Do not place concrete before the related mix design has been reviewed by the Consultant. Mix design submittals shall include proportions.

.2 Supply the Consultant with mill test reports properly correlated to the reinforcement.

1.10 **RECORDS**

.1 Maintain a set of record drawings on site on which the progress of the work can be recorded.

.2 Record the time and casting date for each section of concrete and the date or removal of each section of formwork.

.3 When heat curing is required, record maximum and minimum daily temperatures outside the enclosure and the average temperature within each enclosure, for a period of 3 days after placing the concrete.

.4 Record all modifications to the foundations and superstructure on a set of prints in a neat and legible manner. Use the information to make record drawings at the completion of the work. Dimension all changes. Record location and dimensions of buried mechanical and electrical services.

1.11 **QUALIFICATIONS**

.1 Concrete shall be supplied by a member of the Ready-Mixed Concrete Association of Ontario that has been issued a seal of Special Quality Concrete attesting that its coefficient of variation is less than 12 percent, unless approved by the Consultant prior to the close of tenders.

.2 Welding shall be undertaken by a firm certified by the Canadian Welding Bureau under the requirements of the applicable CSA Standard.

.1 Reinforcing Bars: W186
.2 Structural Steel: W47.1

.3 Welding inspection will be performed by a firm certified by the Canadian Welding Bureau under the requirements of CSA Standard W178.1.

.4 Floor finishing shall be undertaken by a Contractor with at least 5 years of specialized experience in this type of work. Submit substantiating references if asked.

1.12 **STORAGE**

.1 Store materials as follows:

| | | |
|---|---|---|
| .1 | Concrete materials: | to CSA A23.1/A23.2. |
| .2 | Concrete admixtures: | in accordance with manufacturer's directions. |
| .3 | Formwork: | not in contact with the ground and protected from water, oil, dirt or other contamination. Support so as to prevent warping or distortion. |
| .4 | Reinforcement: | on racks or skids so that it is protected from dirt and maintained in its fabricated form. |

1.13 **SITE CONDITIONS**

.1 Visit site to determine available access, storage and working areas. Determine any interference from existing services.

1.14 **FOUNDATION CONDITIONS**

.1 Foundation design is based upon a soils report noted on the Structural Drawings. It is included in the Specification.

.2 The soils report is furnished in good faith for the information of the Contractor but the possibility of deviation from reported conditions must be recognized. The Owner, Consultant and Engineer assume no responsibility for any interpretation or deduction that the Contractor may make from the data and he shall establish the nature of observable conditions to his own satisfaction.

.3 Notify the Consultant in accordance with the requirements of the General Conditions of the Contract if during the execution of the work subsurface conditions are found to differ materially from those indicated in the Contract Documents or soils report.

.4 If foundation elevations or dimensions are revised by the Consultant because of differences between reported and actual subsoil conditions discovered at the time of excavation, the Contract Price will be adjusted. Extras will not be paid because of overexcavation or other conditions within the control of the Contractor.

.5 The Consultant will appoint a Soils Consultant to examine and report on the sub-soil at founding elevations at the time of excavation. Notify the Consultant as to when such examination will be required. Do not proceed with construction of foundations until the Soils Consultant has reported.

.6 Keep construction traffic and loads on the subgrade to a minimum.

.7 Set footings on undisturbed soil capable of supporting the allowable bearing pressures noted on the Drawings.

## PART 2 PRODUCTS

### 2.1 CEMENT

.1 Portland cement: Normal (Type 10) to CSA-A5 and CSA-A23.1.

.2 Supplementary cement: Cementitious Hydraulic Slag, Normal ground blast - furnace slag (Type N) to CSA-A23.5 and CSA-A23.1.

.3 Maximum 20% of total cement content shall be made up supplementary cement.

.4 For Architectural concrete, use only cement from one supplier.

.5 Do not use High Early Strength cement (Type 30) unless approved in writing by Consultant.

### 2.2 WATER

.1 Mixing Water: clear and free from deleterious substances to CSA A23.1. If not taken from the municipal supply, arrange for testing by an independent agency and report results to the Consultant.

.2 Curing Water: Clear and free from deleterious substances to CSA A23.1.

## 2.3 AGGREGATES

.1 Fine Aggregate: natural sand to CSA A23.1.

.2 Coarse Aggregate: crushed stone or gravel to CSA A23.1 and suitable for NBC type N concrete. Nominal size 20 mm.

.3 Obtain coarse and fine aggregates for exposed concrete from the same sources.

## 2.4 ADMIXTURES

.1 Obtain air-entraining admixtures and other admixtures from the same manufacturer when using 2 or more admixtures in the same concrete mix. Dispense admixtures separately into the mix.

.2 Comply with the manufacturer's instructions for use of admixtures.

.3 Ensure that admixtures are free of chloride ions.

.4 Air Entraining Admixtures: to CSA-A23.1. Use one of the listed products:

| | | |
|---|---|---|
| Darex | - | Grace Canada Inc. |
| Airextra | - | Euclid |

.5 Water Reducing Agent, Non-retarding: to CSA-A23.1, Type WN. Use one of the listed products:

| | | |
|---|---|---|
| Eucon WR | - | Euclid |
| WRDA 20 | - | Grace Canada |

.6 Water Reducing Agent, Mild Retarding: to CAN3-A266.2-M78, Type WR. Use one of the listed products:

| | | |
|---|---|---|
| Plastiment | - | Sika Canada Inc. |

.7 Surface Set Retarder: Use "Rugasol S" by Sika Canada Inc. or Top-Stop by W.R. Meadows.

.8 Integral Waterproofer: Use "Anti-Hydro"-R by Anti-Hydro Canada Inc. or approved alternative.

.9 Superplasticizing Admixtures: to CSA A23.1.

| | | |
|---|---|---|
| DARACEM 19 | - | Grace Canada Inc. |
| ADVA 100 | - | Grace Canada Inc. |

## 2.5 GROUT

.1 Dry packed concrete: 1:3 cement-sand and minimum water to dampen mixture. Minimum strength 30 MPa at 28 days.

.2 Premixed grout: Minimum strength 45 MPa at 28 days. Use one of the listed products. Install in accordance with manufacturer's recommendations.

| | | |
|---|---|---|
| Masterflow 713 | - | BASF Building Systems |
| In-Pakt | - | C.C. Chemicals Canada |
| Sealtight V-3 Grout | - | W.R. Meadows of Canada Ltd. |
| Sika 212 HP | - | Sika Canada Inc. |

.3 Grout for bonding post-tensioning tendons: to CSA A23.1.

2.6 **ACCESSORIES**

.1 Install in accordance with manufacturers' directions.

.2 P.V.C. Waterstops:
Construction Joints: 4316 Waterstop by M.R. Meadows Ltd.

.3 Copper Waterstops: To ASTM B370-88, weight 16 oz. per sq. ft. (4.88 kg/m²).

.4 Adjustable Wedge Action Insert, Malleable Iron: "Peerless Wedge Insert" by Acrow-Richmond or "Wedge Insert" by Dayton Superior Canada Ltd.

.5 Dovetail Anchor Slots: Minimum 20 ga. (0.91 mm thick) galvanized steel with insulation-filled slots.

.6 Closed-Cell Preformed Joint fillers (not asphalt based): Use one of the listed products:

| | | |
|---|---|---|
| Ceramar | - | W.R. Meadows Ltd. |
| Konobord | - | Goodco Ltd. |

.7 Expansion Joint Sealant:

| | | |
|---|---|---|
| Sikaflex 1-a | - | Sika Canada Inc. |
| Deck-O-Seal GG | - | W.R. Meadows |

.8 Construction Joint Sealant: Grey, polyurethane, "Sikaflex 1-a" by Sika Canada Inc., or approved alternative.

.9 Saw Cut Joint Filler: Grey, polyurethane, "Loadflex" by Sika Canada Inc.or Rezi-Weld Flex by W.R. Meadows Ltd.

.10 Latex Bonding Agent: “Intralok” by W.R. Meadows Ltd.

.11 Epoxy Adhesive: "Sikadur 32, Hi-Mod" by Sika Canada Inc, or “Rexi-Weld 1000" by W.R. Meadows Ltd.

.12 Closed Cell Insulation (non-load-bearing): "Styrofoam SM" by Dow Chemical Canada Inc.

.13 Curing Paper: "Creped Duplex 30/30/30" by Gummed Papers Ltd., or approved alternative.

.14 Boiled Linseed Oil: to CGSB I-GP-2M.

.15 Non-Slip Inserts: Fine carborundum strips 1/4 in. (6 mm) wide x 3/8 in. (10 mm) deep.

.16 Sliding Bearings: "Elastometal ACME GNN Flat Bearing" by Watson Bowman Acme Inc. or "Series TRR Thin Slides" by Goodco Ltd.

.17 Vapour Barrier below slab: Refer to Section 07 26 16.

2.7 **REINFORCEMENT**

.1 Reinforcing Steel: New deformed bars to CAN/CSA-G30.18 from Canadian mills. Grade 400 MPa or as indicated on Drawings.

.2 Welded Steel Wire Fabric: to CSA Standard G30.15-M from Canadian or American mills. Supply fabric in flat sheets only.

.3 Chairs, Bolsters, Bar Supports, Spacers: to requirements of the Reinforcing Steel Institute of Canada, "Reinforcing Steel Manual of Standard Practice". Use plastic, precast concrete or plastic protected steel bar supports for exposed concrete surfaces and for all slabs exposed to vehicles.

.4 Galvanizing of Non-Prestressed Reinforcement and Bar Supports: to CSA Standard G164-M.

.5 Tie Wire: 16 gauge (1.6 mm) black annealed wire. Use non-corrosive tie-wire for galvanized reinforcing steel.

2.8 **CURING - SEALING COMPOUNDS**

.1 Curing - Sealing Compound: Clear liquid to ASTM C309-Latest Edition, Type 1. Apply as directed by the manufacturer. It shall not darken or discolour concrete surface and shall be compatible with, and not impair bond of, any material laid over it.

.2 Use one of the listed products:
Kure-N-Seal - BASF Building Systems
Sealtight CS 309 - W.R. Meadows of Canada Ltd.

.3 Apply two coats where exposed concrete floors are called for in the Room Finish Schedule: first coat as soon as concrete sets, second coat just prior to occupation by Owner.

2.9 **FORMWORK MATERIALS**

.1 Formwork Lumber: Plywood and wood formwork materials to CSA Standard S269.1 and CSA A23.1/A23.2. Use new materials throughout except for concrete in unexposed locations such as foundations where used material is acceptable.

.2 Plywood Panels: to CSA Standard 0121-M and carry COFI exterior grade stamp. No inserted patches allowed on contact face for exposed locations. Use one of the listed products:
Crown 44: - Fletcher Challenge Canada Ltd.
Pour Form - 107: - Ainsworth Products Company Ltd.

.3 Circular Sections: Use laminated fibre forms "Sonotube" by Sonoco Limited, or approved equivalent.
- .1 Exposed: "Finish Free", seamless, with rip cord
- .2 Not exposed: Regular "W" coated

.4 Circular Void Forms: "Sonovoids" by Sonoco Ltd. or "Permavoid" by Perma Tubes Ltd.

.5 Lining for Board Formed Surfaces: Air dry Spruce or White Pine, random widths, random thickness, rough sawn. Dress edges for close fit. Use galvanized nails only. Seal with "Pre-Form" by Nox-crete, Inc.

.6 Grooves, Reglets, Chamfers and Rustication Strips: White Pine selected for straightness and accurately dressed to size. Provide l to 3 draw unless otherwise shown. Provide continuous saw-cut at back of strip.

.7 Form Ties:
- .1 Internal form ties shall be adjustable metal galvanized after fabrication and designed to act as spreaders at a minimum working strength of 1360 kg. When removed no remaining metal shall be closer than 25 mm to concrete surface.
- .2 Snap ties shall snap cleanly at least 25 mm from concrete surface without damage to concrete.
- .3 Ties for exposed concrete shall be threaded, internal disconnecting type such as "Tyscrus" by Acrow-Richmond, fitted with plastic cones 12 mm diameter x 35 mm deep. Precast plugs - Mills Steel Products, Hamilton.
- .4 Plugs for holes left by disconnecting type ties: precast concrete with 6 mm set back.

.8 Joint Tape for Sealing Panel Joints: "Procan" joint tape supplied by Acrow-Richmond or approved alternative.

.9 Caulking for Joints between Panels: "Sikaflex 1-a" by Sika Canada Inc., or approved alternative.

.10 Prefabricated Tongue and Groove Slab Joint Filler:

Serviced Joint - Goodco Ltd.

.11 Form Coating and Release Agent: Use one of the listed products:

Duogard - W.R. Meadows
Rich-Cote - Acrow-Richmond
Nox-Crete - Nox-Crete, Inc.

## 2.10 PROPORTIONING AND CONCRETE MIXES

.1 Design mixes to produce concrete of the strengths designated; workability consistent with placing conditions and methods; durability consistent with service conditions; and, in the case of floor surfaces, finishability; to CSA A23.1.

.2 Unless otherwise indicated on drawings, concrete shall conform to the following table:

| Location | Strength | Class of Exposure | max. Size of Aggregate | Slump | Water/ Cement | Air Content |
|---|---|---|---|---|---|---|
| Footing, grade beams, foundation walls | 25MPa | F-2 | 20mm | 50-110 | 0.55 max. | 4-7%. |
| Interior structural concrete | 25MPa | N | 20mm | 50-110 | 0.45–0.55 | 0-3% |
| Exterior slabs,walls etc. struct. concrete exposed to chlorides | 35MPa | C-1 | 20mm | 50-110 | 0.4 | 5-8% |
| Exterior walls, columns not exposed to chlorides | 25MPa | F-2 | 20mm | 50-110 | 0.55max. | 4-7% |
| Concrete on deck,steps, landings | 25MPa | N | 10-20 mm | 20-60 | 0.45-0.55 | 0-3% |
| Concrete toppings 25-50mm thick | 25MPa | N | 10mm | 20-60 | 0.45-0.55 | 0-3% |
| Concrete toppings >50mm thick | 25MPa | N | 20mm | 20-60 | 0.45-0.55 | 0-3% |
| Concrete in block lintels, masonry walls | 20MPa | N | 10mm | 100 | | 0-3% |
| Exterior unreinforced pavements | 32MPa | C-2 | 20mm | 40-80 | 0.45max. | 5-8% |

.3 Provide concrete with compressive strength to CSA A23.1, Clause 17.6, except that no individual strength test shall be more than 2.0 MPa below the specified strength.

.4 Use water reducing agent, non-retarding, in all concrete mixes.

.5 Provide air entering agents to give total air content according to CSA-A23.1, Table 10 for each class of exposure for concrete subject to cycles of freezing and thawing.

.6 Obtain Consultant' approval before using any admixtures other than those specified.

.7 Provide superplasticizer in all slab-on-grade and topping concrete to increase slump to 130 mm maximum after addition into the mix.

.8 Adjust the concrete mix proportions as necessary to maintain the quality of the concrete to the satisfaction of the Consultant, without additional costs to the Owner.

.9 Use of calcium chloride not permitted.

2.11 **PRODUCTION**

.1 Use ready-mixed concrete, produced in accordance with CSA-A23.1.

.2 Heat concrete and deliver at a temperature conforming to CSA-A23.1 whenever outdoor temperature is less than +5°C.

.3 Delivery will be accepted directly from the ready-mixed supply trucks.

2.12 **REINFORCING STEEL FABRICATION**

.1 Fabricate reinforcement to CSA-A23.1.

.2 Welding of reinforcement to CSA Standard W186-M.

.3 Fabrication tolerance for reinforcing steel to Reinforcing Steel Institute of Canada, "Reinforcing Steel Manual of Standard Practice".

.4 Do not release for fabrication reinforcing bars whose length may be affected by field conditions, such as the final elevation of footings, until such time as the governing field dimensions have been ascertained.

.5 Obtain Consultant's approval for location of reinforcement splices other than shown on the drawings.

.6 Ship bundles of bar reinforcement clearly identified in accordance with the reviewed bar lists.

.7 Fabricate, handle and ship epoxy-coated reinforcing steel to ASTM-A775M-88a or O.P.S.S. Form 905.

.8 Coordinate with Division 04 for method of masonry wall grouting and length of bars required.

**PART 3 - EXECUTION**

3.1 **EXAMINATION OF EXISTING WORK**

.1 Do not begin operations before making a thorough examination of existing conditions and the work of related trades. Report inconsistencies to the Consultant immediately.

.2 Determine that granular fill beneath slabs on grade is compacted and approved before casting concrete on it.

3.2 **CO-OPERATION**

.1 Give the Consultant and Engineer at least 24 hours advance notice of the time when completed reinforcement will be ready for review. Allow 5 working hours for review and effecting corrections.

.2 Provide casual labour to the independent inspection and testing agency's field personnel for the purpose of obtaining and handling sample materials. Provide free access to all portions of work and co-operate with the Testing Agency.

.3 Cooperate with all engaged on the work. Exchange with related trades shop drawings and other data required to coordinate and schedule the work. Notify other trades as to when items which are to be installed by them are to be set and protect items after installation.

.4 Set sleeves, ties, anchor bolts, pipe hangers and other inserts, openings and sleeves in concrete floors and walls, as required by other Trades. Sleeves, openings, etc., greater than 100 mm x 100 mm not indicated on Structural Drawings must be approved by the Consultant.

.5 Supply and install grout for base and bearing plates. Coordinate installation with the Structural Steel Trade. Grout shall completely fill space between plate and support.

.6 Supply and install galvanized dovetail anchor slots and adjustable inserts for anchorage of masonry or attachment of lintels as necessary. Vertical dovetail anchor slots are required at 600 mm centres wherever masonry and concrete abut and where masonry veneer is applied to concrete surfaces.

.7 Co-ordinate with Division 04 for the construction of concrete columns cast into permanent masonry forms. Provide formwork for sides not formed in masonry.

.8 Do not install sleeves, ducts, pipes or other openings through joists, beams, or columns, except where expressly detailed on Structural Drawings or approved by the Consultant.

.9 Do not eliminate or displace reinforcement to accommodate hardware. If inserts cannot be located as specified, obtain approval of all modifications from the Consultant before placing concrete.

.10 Check locations and sizes of sleeves, openings, etc., shown on structural drawings with architectural, mechanical and electrical drawings.

.11 Set inserts according to design drawings as required by Non-Destructive Method for Testing Concrete.

.12 No trade shall cut holes through existing concrete unless approved by the Consultant.

.13 Do not embed in slabs and walls any conduit or pipe whose outside diameter is greater than one quarter the concrete thickness. Do not space less than 6 diameters on centre. Locate so as not to impair the required strength of the member. Do not install conduit in columns which displaces more than 3 percent of the cross-section. Place embedded conduits between top and bottom reinforcement. At all locations, including crossovers, maintain a minimum concrete cover to conduits not less than one third the slab thickness. Adjacent to columns maintain a minimum distance of twice the slab thickness from any column face to the nearest conduit.

.14 Cooperate with other trades to ensure that concrete surfaces are compatible with finishes and to obtain a surface which will ensure adequate bond.

.15 Provide dowels from concrete to all masonry walls reinforced with bars, as indicated on the Drawings.

3.3 **FORMWORK AND FALSEWORK CONSTRUCTION**

.1 Construct formwork so as to achieve the class of concrete surface specified. Construct falsework to CSA Standard S269.1.

.2 Form sides of all footings unless otherwise noted on the Drawings.

.3 Dimensions of completed elements shall not exceed specified tolerances.

.4 Make panels forming the soffit of slabs as large as possible and arrange symmetrically. Arrange joints on beams symmetrically on the span. Arrange joints on columns to be level from column to column.

.5 Camber formwork for slabs and beams 6 mm per 3 m of span unless shown otherwise.

.6 Make forms tight and flush faced to prevent the leakage of mortar and the creation of unspecified fins or panel outlines.

.7 Place 16 mm chamfer strips at the exposed corners of members unless indicated otherwise on the Drawings.

.8 Construct all formwork so that it can be removed without damage or shock to the concrete or spalling of edges. Provide temporary openings at the base of column and wall forms and at other places where necessary to facilitate cleaning or inspection. Construct formwork for beams to allow removal of side forms without removing the shores.

.9 Provide mud sills of suitable size, bedded in sand or stone beneath shores when they would otherwise bear on soil. Adequately prepare the sub-grade so that settlement will not occur during or after concreting. Do not set mud sills on frozen ground.

.10 Construct formwork and falsework such that loads are not transmitted to any adjacent existing structure.

.11 Apply a form coating and release agent, in a uniform coating, to the contact surface of formwork panels before reuse and before reinforcement, anchors, accessories, and other built-in items are installed.

.12 Seal all lumber in forms for architectural concrete prior to use.

.13 Obtain approval from Consultant before reusing formwork for architectural concrete.

.14 Inspect all forms before each use to ensure that they are not warped or damaged. Do not reuse forms if there is any evidence of surface damage or wear which would impair the quality of the concrete surface.

.15 Before reusing formwork remove all adhering matter and nails. Do not clean forms for exposed concrete with scrapers or wire brushes. Fill nail holes in exposed concrete forms with approved filler. Construct formwork using the original tie holes.

.16 Use internal form ties: For architectural concrete use threaded internal disconnecting type form ties, fitted with plastic cone. Locate ties in a uniform pattern acceptable to the Consultant.

.17 Install tell-tale devices which indicate movement of the formwork during concreting.

3.4 **JOINTS**

.1 Construction Joints:

.1 Provide construction joints as specified unless indicated otherwise on the Drawings. Locate joints so as not to impair the strength of the structure. Joints are subject to the approval of the Consultant.

.2 Maximum distances between construction joints are as follows:
Walls - 9 m, or 18 m alternating with control joints at same spacing.
Slabs on grade - 9 m, or 18 m with sawcut joints at 6 m centres.
Structural slabs more than 88 mm thick and superstructure beams and girders - 23 m.

Structural slabs up to 88 mm thick - 27 m with sawcut joints at 10 m centres.
Retaining walls 6 m.

.3 Locate construction joints near mid-span of spans of slabs, beams and girders unless a beam intersects a girder at this point, in which case the girder joint shall be offset twice that beam width and additional shear reinforcement provided to the approval of the Consultant. Joints in slabs supported by walls or steel beams are preferably located over the supports unless the beam acts compositely with the slab.

.4 Do not locate construction joints in slabs which act compositely with the supporting beam within the middle half of the beam span.

.5 Provide a continuous bulkhead at all construction joints. Provide a continuous keyway at least 38 mm deep to bulkhead except for slabs equal to or less than 88 mm thick.

.6 Extend reinforcing through construction joints. Add dowels, if necessary to make total steel passing through bulkhead at least the equivalent of 15M @ 400 mm centres each face. Embed dowels at least 600 mm each side of joint.

.7 Remove all dirt, loose aggregate and laitance from face of existing concrete before placing new concrete. Saturate contact surface with clean water and leave damp. Remove free water from surface.

.8 Allow a minimum of 24 hours between placing adjacent slab sections separated by construction joints. Allow a minimum of 8 hours after placing concrete in columns and walls, before placing concrete in slabs.

.9 Premoulded tongue and groove construction joints, painted with a curing compound, may be used between adjacent panels of slab on grade to allow a maximum of three adjacent panels to be cast at one time.

.10 Provide construction joint sealant for joints in exterior walls below grade.

.2 Construction Gaps:

.1 Do not place concrete in construction gaps, shown on the Drawings, through the structure until at least 28 days after the full section of concrete on each side of the gap has been placed.

.3 Isolation Joints:

.1 Provide premoulded joint filler of the same depth as the thickness of the concrete, where slabs on grade abut foundation walls and piers, unless slab is chased or dowelled into wall.

.2 Provide premoulded joint fillers of the same depth as the thickness of the concrete at columns through or abutting slabs on grade.

.4 Saw-Cut Joints:

.1 The spacing of construction joints in slabs on grade may be increased to a maximum of 18 m each direction providing each resulting panel is saw cut into approximately square sections not exceeding 6 m in length or width, unless a closer spacing is shown on the Drawings.

.2 Make saw-cut joints in 88 mm and thinner slabs on steel forms or as toppings to create approximately square panels not exceeding 9 m in length or width. Locate joints directly over beams.

.3 Make saw-cut joints, to the size indicated on the Drawings, as soon as the concrete can be cleanly cut and before shrinkage cracks can form. Fill all saw-cuts, not less than 21 days after casting, with saw-cut joint filler. Ensure that joints are clean and dry before filling. Prime joints prior to filling in accordance with joint filler manufacturers recommendations.

.5 Expansion Joints:

.1 Supply and install waterstops, fillers and caulking in expansion joints for full length of vertical joints in foundation walls below grade and floor slab joints.

.2 Install closed cell preformed joint filler and joint sealant in expansion joints at exposed locations. Install joint filler in expansion joints at unexposed locations.

.3 Bond sliding joint assemblies in bearing with epoxy adhesive to the base material.

.6 Waterstops:

.1 Supply and install waterstops in all construction joints in exterior walls, basement walls, slabs supporting earth, sump pits, elevator pits and other locations as indicated on the Drawings. Weld joints in waterstops to make continuous.

.2 Splice all sections of waterstops for continuity over the full length of joint. Use prefabricated splice sections where two joints intersect.

.3 Securely wire waterstops to reinforcing bars at 900 mm maximum centres to prevent them from being pushed out of alignment when concrete is placed.

## 3.5 PLACEMENT OF REINFORCEMENT

.1 Use only approved shop drawings and the Structural Drawings for placing of reinforcement. Report discrepancies to the Consultant before proceeding.

.2 Do not field bend reinforcing steel except where indicated or as approved by the Engineer.

.3 Before placing, remove all loose scale, dirt, oil or other coatings which would destroy or reduce bond. Place reinforcement within the specified tolerances and secure in position by the use of chairs, spacers and hangers. Tie reinforcement securely together using 16 ga. annealed wire to prevent displacement during concrete placing and vibrating. Turn the ends of all ties towards the interior of the concrete. Use galvanized tie wire at all exposed and at all exterior locations.

.4 Position reinforcing for exposed concrete using snap-on plastic positioners and plastic chairs of the same colour as the concrete. Use concrete chairs for slabs on grade.

.5 No splicing of reinforcement is permitted unless indicated on the Drawings. Do not cut reinforcement to permit placing of embedded items.

.6 Lap end cross wires of welded wire fabric but make lap at least 200 mm.

.7 Provide additional reinforcement around all openings in concrete members as detailed on Drawings.

## 3.6 PLACEMENT OF CONCRETE

.1 Place concrete to CSA A23.1/A23.2.

.2 Remove water from excavations before placing concrete.

.3 Clean all forms of debris and deleterious materials before placing concrete. Vacuum clean formwork for architectural concrete and composite steel deck. Remove all contaminants which lessen bond of concrete to reinforcement prior to placing concrete.

.4 Convey concrete from mixer to place of final deposit by methods which will prevent the separation or loss of materials. Time for this operation shall not exceed 30 minutes. Deposit concrete as close as possible to its final position. Placing once started shall proceed as a continuous operation until the full section planned for concreting has been completed. Place concrete in layers of such thickness that no concrete will deposit on concrete which has hardened sufficiently to cause planes of weakness or cold joints.

.5 Do not allow the free fall of concrete to exceed 1500 mm. Use properly designed chutes or elephant trunks for vertical elements.

.6 Select equipment for transporting concrete so that a continuous flow of material will be maintained at the delivery end without separation of materials. Aluminum pipe shall not be used. Keep equipment clean and free from hardened concrete.

.7 Place concrete slabs on steel deck by pumping. Do not allow concrete to build up at one location to more than twice the slab thickness.

.8 Consolidate concrete by suitable means during placing operations. Work thoroughly around reinforcement and embedded items and into corners of forms eliminating all air and stone pockets. Ensure that sufficient workmen are on hand for this operation.

.9 Adjust reinforcement immediately before concrete is placed to ensure that all bars are secured in their correct positions. Arrange to have a crew of reinforcing setters on hand as concrete is placed in order to make any last minute adjustments that are required.

.10 Provide sufficient numbers of internal electrical vibrators, with a speed range and diameter to CSA A23.1 and shaft of sufficient length to suit the field conditions, to compact the concrete at the rate it is being placed. Keep the internal vibrators in continuous operation by each crew during the placing of concrete. Engage experienced workmen to operate the vibrators. Do not use vibrators to move concrete from one place in the form to another. Commence vibration of each lift as soon as its depth reaches 300 mm.

.11 Use form vibrators for columns and other thin sections where rodding, spading or the use of internal vibrators is impractical. Attach vibrators firmly to the forms and so spaced that the complete lift of concrete is visibly affected.

.12 Platform and screed type vibrators may be used to ensure a dense top surface where this cannot be obtained by the use of internal equipment. Obtain approval from the Consultant before using platform or screed type vibrators.

.13 Do not place concrete in the rain. Protect exposed surfaces from rain or other adverse weather conditions until final set occurs.

.14 Place joists, beams, girders, brackets, column capitals and haunches and drop panels monolithically with the floor slabs.

.15 The maximum average time from charging the mixer to final deposit is 60 minutes, the maximum individual time from charging the mixer to final deposit is 90 minutes. Do not add water to the mix without the expressed approval of the Consultant.

## 3.7 ARCHITECTURAL CONCRETE

.1 Architectural concrete is concrete which will be permanently exposed to view in interior finished areas and on the exterior of the structure. The exposed surface shall be a smooth rubbed finish unless otherwise noted.

.2 Final appearance is as important a factor as the engineering properties of the concrete. As-cast concrete, which fails to meet the required standard of appearance will be rejected.

.3 This specification enumerates minimum standards of workmanship only. Increase these requirements as necessary to achieve the specified quality.

.4 Produce exposed surfaces which are dense, even and uniform in colour, texture and distribution of exposed aggregate. They shall be free from defects such as honeycombing, voids, loss of fines, visible flow lines and cold joints. Defects of this nature shall be cause of rejection of the work.

.5 Ensure that concrete members have sharp accurate definition of corners, reglets, arrases etc. and are free from chips and spalls.

.6 Protect finished work from damage and staining during the construction period. Pay special attention to projecting reinforcing at construction joints.

.7 Utilize only new unused materials for all Architectural concrete. Formwork patterns shall be regular and subject to approval by the Consultant.

## 3.8 CURING AND PROTECTION

.1 Provide curing and protection for concrete to CSA A23.1.

.2 Minimize moisture loss from surfaces placed against wooden forms, or, plastic and metal forms exposed to heating by the sun, by keeping the forms wet until they can be safely removed. If forms are removed in less than 7 days, curing shall continue by one of the methods specified for surfaces not in contact with forms.

.3 Curing methods based upon keeping surfaces wet shall continue for at least 7 days. Cure concrete surfaces not in contact with forms except slabs on grade by one of the following methods:

- .1 Ponding or continuous sprinkling.
- .2 Application of absorptive covering kept continuously wet.
- .3 Application of fog spray followed by a covering of curing paper lapped 150 mm and held down at all edges.
- .4 Application of a curing-sealing compound immediately after disappearance of a surface water sheen except coloured concrete surfaces to receive bonded toppings, or mortar beds or membrane waterproofing. Use wet curing methods only whenever the temperature exceeds + 27°C.

.4 Cure slab-on-grade for at least 7 days by one of the following methods:

- .1 Ponding or continuous sprinkling.
- .2 Application of absorptive covering kept continuously wet.

.3 Application of fog spray followed by a covering of impermeable curing paper lapped 150 mm and held down at all edges.

.5 Apply two coats of curing-sealing compound where exposed concrete floors are called for in the Room Finish Schedule; first coat as soon as concrete sets, second coat just prior to occupation by Owner.

.6 Do not pile, store or transport materials over slabs until concrete has been in place for at least 7 days.

## 3.9 REMOVAL OF FORMWORK

.1 Be responsible for the safety of the structure before and after forms are removed. In no case shall forms and supporting shores be removed until members can support their own weight and superimposed construction loads without excessive deflection or distortion. Formwork, exclusive of shoring, shall not be removed prior to the concrete reaching 75 percent of its specified 28 day strength. However, as a minimum requirement, wall forms shall remain in place for at least 3 days, and forms for suspended structures and columns 5 days. Curing and shoring shall be co-ordinated with stripping procedures.

.2 Maintain shoring or reshoring in position for 28 days minimum.

.3 Reshoring is subject to review by the Consultant to whom complete details of the proposed operation shall be submitted in advance. At no time shall large areas of new construction be required to support their own weight and while reshoring is underway no construction loads are permitted on the new construction. The location of reshores shall not significantly alter the pattern of stress assumed in the structural design. Reshores shall be capable of being adjusted so that a snug fit is achieved without preloading lower floors. Reshores shall be positioned immediately after formwork is removed.

.4 Place reshores for flat slabs or plates along the intersection line of the column strip and the middle strip in both directions. For slabs of over 7.5 m span either the middle strip or the column strip forms shall remain in place until adjacent reshores are placed. Complete reshoring of each panel before removing forms from adjacent panels.

.5 In the case of multi-tiered framing, the number of levels requiring shores or reshores will be dependent upon the loads carried and the rate of construction. Members at upper levels shall be placed directly above those below.

.6 Remove formwork from architectural concrete after other formwork has been removed to ensure that the architectural finish is not damaged.

## 3.10 SURFACE FINISHING

.1 Honeycomb:

Repair honeycomb as directed by the Consultant. Cut out affected areas and patch with cement mortar of the same materials as the concrete. Incorporate a liquid latex bonding agent in the mix. Apply in layers not exceeding 25 mm in thickness.

.2 Patching:
Patch exposed concrete as directed by the Consultant. Do not patch concrete without prior approval of the Consultant. Patch concrete such that the repaired area is not discernable from the surrounding finish when the concrete is dry. Determine patching mixes by trial batches. Incorporate a liquid latex bonding agent in the mix. Apply a liquid latex bonding agent to the existing concrete immediately before applying the patch material. Cure patches by keeping continuously moist for seven days.

.3 Form Ties:
.1 Break snap ties 38 mm from surface. Fill voids with a sand-cement grout which, in the case of exposed concrete, shall match surface in texture and colour. Incorporate a latex bonding agent in the grout.
.2 Disconnect threaded ties. Plug holes with plastic plugs set 6 mm from concrete face with a latex bonding agent.

.4 Rough form finish, unexposed concrete:
.1 Patch defects and remove fins exceeding 6 mm in height.

.5 Smooth Rubbed Finish:
.1 Produce finish on concrete no later than 6 hours after forms are removed.
.2 Wet surface and rub with carborundum brick until uniform colour and texture are produced.
.3 Do not use a cement paste.

.6 Sand Blasting:
.1 Finish surface as required for smooth rubbed finish.
.2 Obtain Consultant's approval before sand blasting.
.3 After concrete is at least 21 days old and thoroughly cured, sand blast using a hard sharp sand until coarse aggregate is in uniform relief and a light texture is achieved.

.7 Bush Hammering:
.1 Obtain Consultant's approval of as-cast concrete surfaces before starting work.
.2 Bush hammering shall result in a coarse but uniform texture which exposes the broken face of the coarse aggregate to a depth of 3 mm.
.3 Do not commence hammering until concrete is at least 21 days old and thoroughly cured.

.8 Acid Etching:
.1 Finish surface as required for smooth rubbed finish. Obtain Consultant’s approval before etching. Do not commence etching until concrete is at least 14 days old.
.2 Achieve etching by scrubbing the surface with a weak solution of hydrochloric acid whose strength shall be adjusted as required to achieve the desired effect. Treat sample panel initially with 1:6 acid:water solution
.3 Immediately after the cement paste has been removed wash the concrete surface thoroughly with water to remove remaining acid and to stop further chemical action.
.4 Workmen shall be equipped with gloves, goggles and protective clothing.

.9 Slabs:
.1 Do concrete floor finishing to CSA A23.1, Clause 22 Class A.
.2 Place slabs with a top surface that is level or sloping as indicated on the Drawings. Set top of slab below finished floor level as required by the type of applied finish.

.3 Consolidation and finishing shall be done by workmen experienced in each stage of such work. Ambient temperature shall not be less than 16°C. Do not start any finishing operation while there is excess moisture or bleed water on the surface.

.4 Provide final finish in accordance with proposed use. Refer to Room Finish Schedule:

.1 Skim coats, pits: Screeded and bull floated

.2 Base slab for tile or bonded topping: Screeded, bull floated and scored with wire brush

.3 Slabs which receive a membrane [incl. roofing]:
.1 Powered float finish to satisfaction of Membrane Applicator

.4 Floors which receive resilient flooring, carpet or paint, wood flooring, fluid and trowel applied flooring, sheet flooring, future floors:
.1 Powered steel trowel finish

.5 Interior exposed slabs: Powered steel trowel finish

.6 Exterior exposed slabs: Wood float finish with brooming

.7 Parking area slabs: Wood float finish

.5 Steel trowel exposed interior concrete floors at least twice.

.10 Stairs:
.1 Provide a slip resistant steel trowel finish to exposed concrete stair treads and landings.
.2 Install carborundum strips at edges of treads and landings if shown on the Drawings.

.11 Preparation for applied finishes:
.1 When concrete surface is to receive a waterproofing or other surface applied treatment, clean and prepare as necessary to receive the treatment.
.2 Acid etch the surface if necessary to provide the required degree of roughness for proper bond, to the satisfaction of the applicator.

## 3.11 BONDED TOPPINGS

.1 Not more than 24 hours prior to applying concrete toppings, clean base slab of dirt, laitance, loose material and grease. Scrub with 10 percent solution of muriatic acid and rinse clean. Four to six hours before laying topping, saturate surface with clean water. Surface shall have reached a damp condition at the time the new concrete is placed. Apply a slurry coat of cement and water to the surface and immediately follow with the topping.

.2 Do not allow the temperature difference between base slab and new concrete to exceed 6°C when concrete is placed.

.3 Make mix consistency as stiff as can be worked with a sawing motion of the strike-off board. Consolidate concrete by rolling and tamping. Float with a power floating machine weighing at least 90 kg. Finish and cure as specified for floors.

.4 Locate joints in top course directly over joints in base course.

.5 Minimum thickness of topping over cambered base slab shall be 38 mm at high point.

.6 Remove any concrete which seeps through joints of precast units and clean surface before concrete sets.

3.12 **SLABS ON GRADE**

.1 Determine that the compacted granular fill supporting slabs-on-grade has been approved before starting work.

.2 See Drawings for thickness of concrete and slab reinforcing.

.3 Provide slab depressions and slopes as indicated on the Architectural Drawings. Slope floors to drain.

.4 Over stone base, place 15 mil polyolefin sheet vapour barrier as specified in Section 07 26 16

.5 Avoid penetrations in vapour barrier as much as possible; do not use screed pins. Insure that any tears or holes (including pin holes) are repaired immediately before concrete is placed. Vapour barrier is to be turned up walls minimum 200mm at edges of slab.

.6 Do not pour concrete until vapour barrier installation has been inspected and approved by the testing and inspection company as specified above.

.7 For underlying materials for slab on grade see Section 31 23 00.

3.13 **REINFORCED MASONRY**

.1 Supply concrete and reinforcement required by the Masonry Trade for the construction of band courses and masonry lintels over openings in walls and partitions. Note that Structural Drawings do not show all openings. Refer to General Notes on Structural Drawings.

.2 Supply reinforcing steel for reinforced masonry walls. Cells containing reinforcement will be filled with concrete grout of 20 MPa minimum 28 day strength, supplied and installed under the Unit Masonry Section.

.3 Construct control joints which are located at the sides of masonry panels above channel block lintels so as not to reduce the structural capacity of the lintel. The control joint shall not extend through the lintel. Make the aligning vertical mortar joint in the lintel solid and afterwards rake it back 10 mm on the exposed face in order to match the joint in the panel.

.4 Where the opening spanned by the lintel is adjacent to a concrete face or steel column, provide a shelf L-90 x 90 x 10 mm welded or bolted to the support.

.5 Construct reinforced masonry walls to conform to the requirements of the Ontario Building Code. Lay units so as to maintain an unobstructed vertical continuity in the cells. All walls and cross webs shall be fully bedded. No over-hanging mortar or debris shall be allowed inside the reinforced cells. Reinforcing shall be provided full length without splicing but may be installed after the first 1200 mm of masonry is erected. Locate rods accurately in the cells as shown on the Drawings. Hold in position top and bottom. Fill cells containing reinforcement solidly with 20 MPa concrete grout containing 5 mm nominal sized aggregate. Consolidate by puddling when placing and again reconsolidate before plasticity is lost. Place concrete grout in lifts not exceeding 1200 mm. Stop each lift 38 mm below the top of a masonry unit.

3.14 **SUMPS, PITS, BASES**

.1 Construct all concrete sumps, pits, trenches and machinery bases forming part of floor slab construction which are required within the building by or for the Mechanical Trades.

.2 Provide 100mm concrete curbs around all duct and pipe penetrations through all floors above grade.

.3 Provide isolation joints between machinery bases and slabs.

.4 Provide concrete bases at all locker locations.

3.15 **SIDEWALKS, CURBS**

.1 Construct street sidewalks and curbs to Ontario Provincial Standard Specification OPSS 351, and the requirements of the municipality if more stringent than the requirements of this Specification. Coordinate and pay for curb cuts through the municipality.

.2 Compact subgrade to 98 percent Standard Proctor Maximum Dry Density. Obtain Consultant's approval of the subgrade before proceeding with the work.

.3 For underlying materials for exterior sidewalks see Section 31 23 00.

.4 Provide concrete with a minimum 28 day compressive strength of 32 Mpa, Class C-2 according to the material requirements of this specification.

.5 Thickness of sidewalk to be 150mm, and 200mm across driveways and access locations to playgrounds and garbage enclosures.

.6 Reinforce sidewalks with 152 x 152-MW18.7/MW18.7 welded wire fabric. Lap ends 150 mm minimum.

.7 Reinforce curbs with 1-15M bar top and bottom unless indicated otherwise on the Drawings. Provide all steps with 10M nosing bars.

.8 See Architectural Drawings for details of jointing, edging, and surface pattern.

.9 Provide expansion joints at 4.5 m centres, intermediate false joints at 1.5 m centres,one way broom finished surfaces, and, round edges and joints to 12 mm radius, unless indicated otherwise on the Drawings.

.10 Install 12 mm preformed joint filler in expansion joints and between sidewalks and curbs and adjacent structures.

.11 Cure with curing-sealing compound.

.12 After curing, give surfaces two coats of a mixture of equal parts boiled linseed oil and kerosene. Apply when surfaces are dry and the air temperature above +7°C. Coverage for each coat shall be 9 $m^2$ per litre.

.13 Construct a sample panel of sidewalk for the Consultant's approval.

3.16 **COLD WEATHER CONCRETING**

.1 Refer CSA A23.1 and comply with its requirements.

.2 Ensure that any surface against which concrete is to be placed, including soil but excluding surfaces which receive finished slabs, is at a temperature of at least +5°C. Ensure that the surface on which finished slabs and toppings are placed is at a temperature of between 16°C and 32°C.

.3 Ensure that the temperature of concrete when deposited is between 16°C and 32°C whenever the air temperature is below +5°C.

.4 Ensure that before concreting commences in any part of the work, it is protected in such a manner that all sections of the concrete and the surrounding air will remain continuously at a temperature of not less than 10°C for 5 days, or 21°C for 3 days, after placing. Gradually reduce the temperature at the end of the period of protection, at a rate not greater than 10°C per day until the outside air temperature is reached. Humidify the air within enclosures so that proper conditions for curing are maintained. Exhaust gas-fired or oil heaters directly to the outside of the enclosure. Keep coverings clear of the tops of slabs to allow for the free circulation of warm air.

3.17 **HOT WEATHER CONCRETING**

.1 Refer to CSA A23.1, Clause 21 and comply with its requirements.

.2 Sprinkle all formwork, steel deck, reinforcing, subgrade and the general area around the work with cool water just before placing concrete to reduce temperatures and increase humidity. Place concrete as quickly as possible. Do not place concrete whose temperature exceeds +32°C.

.3 Shelter exposed surfaces from direct sun and wind by erecting appropriate sun shades and/or wind breaks. Apply fog sprays as soon as possible after placing in order to guard against plastic shrinkage cracks.

3.18 **TOLERANCES**

.1 Concrete

.1 Variation from plumb:
Generally: 6 mm per 3000 mm, 25 mm max.
Grooves and conspicuous lines: 3 mm per 3000 mm, 12 mm max.
Elevator shafts and exposed exterior columns: 3 mm per 3000 mm, with 25 mm max.

.2 Variation from level or grades:
Generally: 6 mm per 3000 mm, 12 mm per bay, 19 mm max.
Steel trowelled floor surfaces, exposed spandrels and lintels, grooves and conspicuous lines: 3 mm per 3000 mm, 12 mm max.

.3 Variation from established position on plan: 12 mm per 6000 mm or bay, 25 mm max.

.4 Variation in cross-sectional dimensions of columns and beams, and in thickness of slabs and walls: Minus 6 mm, plus 12 mm.

.5 Footing variations:
Plan dimensions: Minus 12 mm, plus 50 mm.
Misplacement or eccentricity: 2 percent in direction of misplacement, 50 mm max.
Thickness: Minus 5 percent

.6 Projection over legal boundary: Zero

.2 Reinforcement

.1 Variation in fabrication
Sheared length, location of bends: 25 mm
Overall dimensions of stirrups, ties (and spirals): 12 mm

.2 Variation in placing from specified positions.
.1 Clear distance to formed surface: 6 mm
.2 Top bars in beams and slabs:
.1 200 mm deep or less: 6 mm
.2 200-600 mm deep: 9 mm
.3 over 600 mm deep: 12 mm
.3 Crosswise of members: Spaced evenly within 50 mm.
.4 Lengthwise: 50 mm except 12 mm at discontinuous ends.

.3 Tolerances in location of reinforcement are not cumulative with concrete tolerances.

.4 Interfacing materials
If more stringent tolerances are specified elsewhere to suite interfacing materials, these will take precedence over those specified herein.

## 3.19 GENERAL REVIEW OF CONSTRUCTION

.1 General review during construction by the Consultant and Engineer and the services of the independent inspection and testing agencies appointed by the Consultant are undertaken so that the Owner may be informed in writing as to the quality of the Contractor's performance and for the protection of the Owner. They will be carried out by examination of representative samples of the work.

.2 The Contractor will receive copies of the construction review reports and the results of material tests. He will thereby be informed of deficiencies found together with recommendations for their correction. The provision of this information does not relieve the Contractor of his responsibility for the performance of the Contract and he shall implement his own supervisory and quality control procedures.

.3 The Contractor shall bring to the attention of the Consultant and Engineer any deficiencies in the Work which may occur during construction. The Engineer will decide upon corrective action and state his recommendations in writing.

## 3.20 WORKMANSHIP

.1 Proper workmanship is the most important element in the achievement of quality concrete. Minimum requirements are conformity with CSA-A23.1 but the Contractor shall take every precaution necessary to achieve the specific requirements of the Contract.

## 3.21 INDEPENDENT INSPECTION AND TESTING

.1 The Consultant will appoint an independent inspection and testing agency to undertake testing of concrete and concrete materials.

.2 The cost of testing will be paid from the Cash Allowance.

.3 Payment for additional testing (including testing of the structure and its performance, and load testing) required by changes of materials or mix design requested by the Contractor, and failure of completed work to meet specified requirements and testing, shall be made at the Contractors expense.

.4 Notify the agency as to the concreting schedule. Provide samples and standard test cylinders.

.5 Laboratory curing and testing of samples will be carried out in accordance with CSA A23.1/A23.2. Results will be reported to the Consultant with copies to the Consulting Engineer, the Contractor and the Authority having jurisdiction. Reports will be made on form conforming to CSA A23.2, Appendix B, stating the location of concrete to which tests relate and with comments on abnormal results and conditions.

.6 Provide a group of three test cylinders for each standard strength test. One cylinder will be tested at 7 days and two at 28 days.

.7 Provide one additional test cylinder, cured at the site under conditions similar to the concrete it represents, for testing at 7 days when concrete is placed under cold weather conditions.

.8 Take samples at the discharge end of the pipe when concrete is pumped.

.9 The percentage of entrained air will be determined and reported for concrete requiring an air entraining agent.

.10 In cold weather conditions, where concrete is exposed to temperatures below + 5° C, carry out non-destructive testing to CSA A23.2, Appendix A and related ASTM Standards to determine concrete strength prior to stripping formwork. Report results to the Consultant.

.11 Autogenous Accelerated Curing Tests will be undertaken in accordance with CSA A23.2, Test Method A23.2-10C. The agency will provide curing containers. A group of 2 cylinders is required for each strength test. The agency will establish the relationship between the accelerated tests and the standard 28 day tests for each range of water- cement ratios.

.12 The inspection and testing agency will inspect formwork for Architectural concrete before each section is cast to ensure that all features affecting the appearance of the finished concrete surfaces have been properly considered.

.13 Obtain representative samples of fresh concrete from each 100$m^3$ or fraction thereof of each mix design of concrete placed in any one day. Samples are to be taken at the pour, not at the truck.

.14 Inspect installation of vapour barrier below slab-on-grade, immediately prior to pouring of slab.

3.22 **QUALITY CONTROL ON-SITE**

.1 Make all required field measurements.

.2 Employ a competent surveyor to establish and maintain all required lines and levels. Report any field dimension which does not agree with the Drawings to the Consultant immediately.

.3 Formwork:
- .1 Do not close deep forms until reinforcement has been reviewed.
- .2 Check elevations, camber and plumbness of formwork continuously during concreting and after until initial set occurs using pre-installed tell-tale devices. Appropriate adjustments shall be promptly made where necessary. Report all adjustments made after initial set to the Consultant.

.4 Reinforcement:
- .1 Ensure that reinforcement is kept free from dirt, grease, loose mill scale and rust.
- .2 Ensure that reinforcement is complete, adequately supported, tied and properly positioned for cover in advance of the time scheduled for casting concrete.

.5 Concrete tests:
- .1 One standard strength test is required for each 40 $m^3$ of concrete placed, but not less than one test for each mix design of concrete placed each day. Store cylinders in metal lined curing boxes maintained at a temperature of not less than 10 ° C until shipped to the testing laboratory. Store additional cylinder required for cold weather conditions adjacent to work for 7 days.

.2 One standard air entrainment test is required for each 40 $m^3$ of air-entrained concrete or portion thereof placed each day.

.3 Make slump tests in accordance with CSA-A23.2, Test Method A23.2-5C, with each standard strength test and when so directed by the Consultant.

.4 Store samples for autogenous curing in the special containers which is part of the test equipment.

.5 Ship test cylinders with completed shipping tag attached. Provide identification and sufficient information to correlate the cylinder to the information taken by the testing agency, to complete the report form as per Appendix B, CSA-A23.2.

.6 The Contractor shall install thermometers for recording temperatures when concrete is placed under cold weather or hot weather conditions.

.7 Ensure that supervisory personnel are on hand when concrete is being cast so that the placing and curing procedures of the specification will be properly observed.

3.23 **REJECTED WORK**

.1 Do not deliver to the site materials which are known not to meet the requirements of the specification. If rejected after delivery they shall be removed immediately.

.2 Where the Consultant's review reveals materials or workmanship which appear to have failed to meet the specified quality, he shall have the authority to order additional curing; to have tests made of in-situ concrete, concrete cores, reinforcement or other materials; to order a structural analysis of the existing elements and load test the structure. All such work will be carried out in order to assist in determining whether the structure may, in the Consultant's opinion, be accepted, with or without strengthening or modification. All expense incurred shall be chargeable to the Contractor regardless of the results. All testing shall meet the requirements of the Ontario Building Code.

3.24 **CLEAN-UP**

.1 Remove rubbish and surplus materials leaving the work ready for the Trades that follow.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 RELATED WORK

| | | |
|---|---|---|
| .1 | Concrete & Masonry Reinforcement | Section 03 20 00 |
| .2 | Repair of existing masonry walls | Section 04 01 00 |
| .3 | Masonry Accessories | Section 04 05 23 |
| .4 | Clay Masonry Units | Section 04 21 00 |
| .5 | Concrete Masonry Units | Section 04 22 00 |

### 1.2 REFERENCE STANDARDS

| | | |
|---|---|---|
| .1 | CAN/CSA A179 | Mortar and Grout for Unit Masonry |
| .2 | CAN/CSA A371 | Masonry Construction for Buildings |
| .3 | CSA A3000 | Cementitious Materials Compendium |
| .4 | ASTM C 780 | Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry |
| .5 | ASTM C 1357 | Standard Test Methods for Evaluating Masonry Bond Strength |

### 1.3 QUALITY ASSURANCE

.1 Arrange for representative of mortar manufacturer to meet with mason on site prior to commencement of masonry work, to review proper mixing procedures of mortar. Mixing must conform to instructions from supplier of pre-mixed mortar materials.

.2 Mason shall warrant that only mortar containing integral water-repellent mortar admixture, added at the manufacturer's recommended rate, has been placed in exterior concrete masonry walls.

.3 Submit test data as specified below.

### 1.4 COLD WEATHER REQUIREMENTS

.1 During cold weather, lower than 5°C, when danger of freezing exists, heat all masonry materials using methods accepted in the industry, in conformance to CSA-A371, and approved by the Consultant.

### 1.5 SUBMITTALS

.1 Submit three (3) copies of performance data sheet for mortar mixtures. Indicate related standards and mortar properties in terms of compressive strength, water retention and air content. Provide all test certificates required for mortar mixture lots delivered to site.

### 1.6 TESTING

.1 Testing of mortar materials will be carried out by Testing Laboratory designated by Consultant.

.2 Pay for tests from Cash Allowance, Section 01 10 00.

.3 Submit samples of sand and water for testing to ensure that mortar will not produce efflorescence.

.4 Test all mortar to be mixed with sand on site according to CSA-A179, aggregate to cementitious ratio test. Testing Company to supervise mason in preparation of a sample mix which will act as the control ratio, as determined by testing company. "Sample ratio" tests will be conducted throughout construction and compared to control ratio. These ratios must not differ by more than 15%.

.5 Test for compliance with the performance requirements for integral mortar water-repellence. Mortar shall be capable of achieving a Class E Rating when evaluated using ASTM E 514 with the test extended to 72 hours, using the rating criteria specified in ASTM E 514.

.6 Perform compressive strength tests on all mortar and grout in accordance with the requirements of CSA S304.1. Compressive strengths must conform to the property specifications of CSA-A179.

.7 Perform tests for flexural bond strength of masonry in accordance CSA S304.1. Flexural bond strengths shall not be less than 0.20MPa, in conformance with CSA-A179.

## PART 2 MATERIAL

### 2.1 MATERIALS

.1 Sand: fine grain aggregate, graded in accordance with CSA A179

.2 Water: potable, free off ice and any contaminants, to CSA A179.

.3 Portland cement: to CAN/CSA-A5 normal Type 10.

.4 Hydrated lime: type 'S', in accordance with ASTM C207

.5 Colouring agent: As recommended by mortar manufacturer. Colour to match existing.

### 2.2 MORTAR

.1 Mortar: Bulk preblended silo mix as supplied by Max-Mix or King Masonry Products. Colourants to be premixed with mortar materials. Colour to be selected by Consultant.

.2 Mortars for clay brick and concrete unit masonry to be Portland cement/ hydrated lime/ sand mortars to the property standards of CSA A179.

.3 Mortar for masonry foundations, load bearing walls and partitions to be Type 'S' as per property specifications of CSA A179.

.4 Mortar for exterior masonry veneer, and non-load bearing walls and partitions to be Type 'N' as per property specifications of CSA A179, unless indicated otherwise on the Structural Drawings.

.5 Compressive strengths of mortars shall conform to the values indicated on Tables 8 and 9, for solid brick and concrete block respectively, of CSA Standard A179. Compressive strength of mortars must not exceed the compressive strength of the masonry units with which they are being used.

2.3 **SOURCES**

.1 Use same manufactured brands and sources of mortar materials for entire project, in order to ensure uniformity of mix and colouration.

2.4 **PARGING**

.1 Cement mortar parging: 1 part cement, 1 part lime to 6 parts sand by volume with sufficient water for a trowelable mix.

## PART 3 - EXECUTION

3.1 **MIXING OF MORTARS**

.1 Mason to review mixing procedures with mortar manufacturer.

.2 Mix mortar thoroughly, in quantities only as needed for immediate use.

.3 Mix mortar in mechanical mixer operated until homogeneously blended, but not less than 3 minutes after all materials are in mixer.

.4 Obtain manufacturer's approval for any additives.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 RELATED WORK

| | | |
|---|---|---|
| .1 | Concrete & Masonry Reinforcement | Section 03 20 00 |
| .2 | Repair of existing masonry walls | Section 04 01 00 |
| .3 | Masonry Accessories | Section 04 05 23 |
| .4 | Concrete Masonry Units | Section 04 22 00 |

### 1.2 SUBMITTALS

.1 Submit product data sheets for all reinforcement types proposed for use in this project, in accordance with Section 01 33 23.

.2 Include a copy of the data sheets in the shop drawing manual at the conclusion of the project.

.3 Submit samples of anchors, ties, and fasteners for approval of Consultant.

## PART 2 MATERIALS

### 2.1 MATERIALS

.1 Reinforcing bars: to CSA G30.18, Grade 400.

.2 Masonry Reinforcement:

.1 This Specification is based on products manufactured by Blok-Lok Limited. Products listed by Hohmann and Barnard, Inc. and Wire-Bond are approved equivalents.

.2 Size: Wall thickness less 50mm.

.3 Weight :

.1 Standard Ladder type reinforcement shall be extra heavy duty, with 4.8mm side wires and 3.8mm (9 ga) cross wires, welded.

.2 Ladder type reinforcement shall be super heavy duty where noted below or on drawings, with both side and cross wires 4.8mm thick, welded.

.4 Finish:

.1 Hot dipped galvanized after fabrication to ASTM A153-B2 and CSA G164, minimum 1.5 oz/sq. ft.

.2 Provide stainless steel where indicated below, or on drawings.

.5 For multi-wythe solid walls above & below grade:

.1 Blok-Lok Cavity-Lok BL12, extra heavy duty, 4 wire; H&B #240; or Wire-Bond Series 200 Ladder 4 Wire.

.6 For multi-wythe solid walls above grade consisting of brick and block.

.1 Blok-Lok Tri-Lok BL11, extra heavy duty, 3 wire; H&B #230; or Wire-Bond Series 200 Ladder 3 Wire.

.7 For cavity walls:

.1 Blok-Lok Econo-Cavity Lok BL21, super heavy duty, with 4.76 mm wire; H&B #250; or Wire-Bond Series 400 Ladder Fixed Tab.

.8 For single wythe, solid, interior masonry walls:

.1 Blok-Lok BL10; H&B #220, or Series 200 Ladder 2 Wire by Wire-Bond.

.9 For cavity walls when block wythe is constructed in advance of brick:

.1 Blok-Lok BL42 providing rigid two way anchorage of both wythes, with System 2000 ties; H&B #280 Dub'l Loop-Lok; or Wire-Bond Tab Lock Ladder with 4.8mm diameter locking pintles.

.10 For cavity walls where joints in exterior and interior wythes do not align and adjustable reinforcing specified above cannot be used:.

.1 Interior wythe block reinforcement: extra heavy duty reinforcement as specified above.

.2 Ties between wythes: Blok-Lok BL-507 Anchor and Flex-O-Lok Tie, HB DW-10 with VBT tie.

.3 Fasteners for anchors: Hilti "Kwik-Con II" -14-114 THWH stainless steel, or Ucan "Scru-it" SSH 14114 stainless steel.

.4 All reinforcing and ties hot dipped galvanized, anchors to be stainless steel.

.11 Provide prefabricated tees and corners.

.3 Wall Ties:

.1 Masonry to Masonry:

.1 Corrugated Wall Ties of 1.2 mm (18 ga.) galvanized steel, 22mm wide, by length required for the application.

.2 Length to be long enough to embed minimum 75 mm into each bearing or to fit dovetail anchor slots, unless otherwise noted on drawings.

.2 Masonry to Structural Steel:

.1 Blok-Lok Flex-O-Lok BLT9, sized to suit wall thickness less 50mm, with continuous weld-on anchors Flex-O-Lok, type A; H&B VEE-Byna Tie with 359 weld-on ties; or Wire-Bond Triangular Tie 1100 with Type 1 Weld-On Anchor.

.2 Ties minimum to be minimum 4.76mm stainless steel wire. Weld-on anchors to be minimum 6.35mm diameter stainless steel wire.

.3 Dovetail anchor slots and ties: Hot dipped galvanized anchor slots with minimum 9 gauge hot dipped galvanized ties.

.4 For Securing Insulation: Wedge-Lok by Blok-Lok

## PART 3 - EXECUTION

### 3.1 INSTALLATION OF MASONRY ANCHORAGE AND REINFORCEMENT

.1 Refer to Section 04 22 00 for installation of masonry anchorage and reinforcement.

.2 Refer to structural drawings for additional requirements. All reinforcing shall conform to structural requirements as a minimum. Where structural requirements differ from these specifications, the most stringent requirements shall apply.

.3 Note that "solid wall" describes a masonry wall consisting of 1 or more wythes of brick and/or block (which may be solid or hollow core) with mortar joint only between wythes - no air space.

.4 Install reinforcement as indicated above for the materials specified, in conformance with structural drawings and manufacturer's instructions.

.5 Provide and install prefabricated tees and corners at wall corners and intersections.

.6 At exterior walls where coursing results in non-alignment of interior and exterior wythe horizontal joints, each wythe shall be reinforced in every second horizontal joint. Interior and exterior wythes shall be tied together with ties anchored to exterior face of interior block and vee wall ties laid into horizontal joints of exterior wythe.

.7 Install ties in accordance with Ontario Building Code.

.8 Pre-drill for anchors using appropriate type and size of bit. Provide two anchors per tie with minimum embedment of 25mm. Conform to manufacturers specifications.

.9 Test at least two anchors to failure. Test must be carried out by a Professional Engineer and must certify tension load test to anchor failure. Cost of test will be paid from Cash Allowance included in the Contract.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 RELATED WORK

| | | |
|---|---|---|
| .1 | Masonry Mortar and Grout | Section 04 05 13 |
| .2 | Masonry Anchorage and Reinforcement | Section 04 05 19 |
| .3 | Masonry Accessories | Section 04 05 23 |
| .4 | Loose Angle Lintels | Section 05 52 00 |
| .5 | Lateral Support Angles | Section 05 52 00 |
| .6 | Building Insulation | Section 07 21 00 |
| .7 | Vapour Barrier | Section 07 26 00 |
| .8 | Joint Sealant | Section 07 92 00 |

### 1.2 REFERENCE STANDARDS

| | | |
|---|---|---|
| .1 | CAN/CSA-A165 Series | CSA Standards for Concrete Masonry Units |
| .2 | CAN/CSA-S304.1 | Design of Masonry Structures |
| .3 | CAN/CSA-A371 | Masonry construction for Buildings |
| .4 | CAN/CSA-A370 | Connectors for Masonry |
| .5 | National Concrete Masonry Association | |
| .1 | NCMA TEK 10-2C | Control Joints for Concrete Masonry Walls - Empirical Method |
| .2 | NCMA TEK-2A | Removal of Stains from Concrete Masonry |
| .3 | NCMA TEK-3A | Control and Removal of Efflorescence |
| .4 | NCMA TEK-4A | Cleaning Concrete Masonry |

### 1.3 SUBMITTALS

.1 Submit duplicate samples of masonry units in accordance with Section 01 33 23.

### 1.4 EXTREME WEATHER REQUIREMENTS

.1 During cold weather, lower than 5°C, when danger of freezing exists, heat all masonry materials using methods accepted in the industry and conforming to CAN/CSA-A371, and approved by the Consultants.

.2 Protect scaffolds from cold and wind with polyethylene or other barricades. Use heaters on the scaffolds where necessary to protect workmen and materials. PROVIDE PROTECTION WHENEVER NECESSARY TO PREVENT CESSATION OF WORK.

.3 During hot weather protect freshly laid masonry from drying to rapidly, by means of waterproof, non-staining coverings. Wet units during hot drying weather so that mortar does not dry too rapidly. Units must be free of water adhering to their surfaces when they are laid. Conform to Hot Weather Requirements in CAN/CSA-A371.

### 1.5 PROTECTION

.1 Cover top of completed and partially completed wall not enclosed or sheltered, with water proof coverings at end of working day. Drape cover over wall and extend 600mm down both sides. Anchor securely in position with metal wall clamps.

.2 Protect adjacent surfaces from marking or damage due to masonry work.

## PART 2 - MATERIALS

### 2.1 MATERIALS

.1 Concrete blocks:
- .1 to CAN/CSA-A165 Series, metric modular, Type H/20/A/M for foundations, Type H/15/A/M in concealed spaces, and H/15/D/M lightweight for exposed walls above grade.
- .2 Provide block of higher compressive strength where indicated on structural drawings.
- .3 Blocks for fire rated partitions to have required percentage of solid material necessary to provide rating.
- .4 Sizes as indicated on drawings.

.2 Curing of lightweight block:
- .1 Autoclave or low pressure steam curing is acceptable, provided that masonry units comply with linear shrinkage and moisture content requirements of CSA A165.1 for type M units at time of delivery to site.
- .2 Age all units, prior to delivery to site, as follows:
  - .1 Autoclaved units: minimum 7 days.
  - .2 Low pressure steam cured units: minimum 28 days

.3 Special Shapes:
- .1 Bond beam, lintel beam, corner and other shapes as required or indicated on drawings.
- .2 Provide external corner units as a single unit, with required architectural face appearance on one side and one end.

.4 Metal Anchors: Conforming to Ontario Building Code and Section 04 05 19.

.5 Through Wall Flashing: Refer to Section 07 26 00.

.6 Cavity Wall Ties: As specified in Section 04 05 19.

.7 Mortar: as specified in Section 04 05 13.

.8 Mortar Net: As specified in Section 04 05 23.

.9 Control joints: Sealant and backing rod, with filler specified Section 04 05 23.

### 2.2 EXPOSED MASONRY FACES

.1 Notwithstanding visual inspection requirements of CSA standards, masonry units shall be free of surface indentations, surface cracks due to manufacture, or chipping. Units so delivered shall be culled from use for exposed purposes, but may be used where concealed.

.2 Concrete masonry units exposed both sides, such as at interior partitions walls, must be visibly uniform in width, so that both faces of the wall are smooth, with all block faces in plane. Total variation in width must not exceed 2mm. Mason shall reject blocks which do not conform to this size requirement.

## PART 3 - EXECUTION

### 3.1 WORKMANSHIP

.1 Build masonry work true-to-line, plumb, square and level, with vertical joints in proper alignment.

.2 Assume complete responsibility for dimensions, plumbs and levels of this work and constantly check same with graduated rod.

.3 Masonry courses to be of uniform height, and both vertical and horizontal joints to be of equal and uniform thickness.

.4 Extend non-loadbearing partitions to underside of floor or roof structure above, providing 25mm deflection clearance. Install lateral support angles, as specified in Section 05 52 00, and insulation filler as detailed.

.5 Carry wall up in uniform manner, no one portion being raised more than 1200mm above another at any time. Build no more than 1500mm of wall measured vertically in any one day.

.6 Buttering corners of units, throwing mortar into joints, deep or excessive furrowing of bed joints not permitted. Do not shift or tap units after mortar has taken initial set. Where adjustments must be made after mortar has started to set, remove mortar and replace with fresh supply.

.7 Isolate masonry from vertical structural steel framing in exterior walls using 6mm thick asphalt impregnated rigid board cemented to steel columns.

.8 Where new masonry abuts old or fully set masonry, clean existing surfaces and dampen if necessary to obtain bond.

.9 Evidence of non compliance with Contract Documents including the following will require replacement and/or repair:
- .1 Shrinking
- .2 Curling
- .3 Spalling
- .4 Poor color blend
- .5 Poor texture blend
- .6 Discolouration of mortar
- .7 Chipping

### 3.2 BLOCKWORK

.1 Lay concrete block in running bond, except as noted on Drawings, with thicker end of face shell upward. Standard coursing to be modular 200mm for one block and one joint.

.2 Use lightweight concrete blocks for exposed interior surfaces of walls and partitions. Regular concrete blocks may be used for concealed surfaces.

.3 Use special shaped, and finished units where indicated, specified or required. Use bull-nosed units for exposed external corners, window jambs, etc. Exposed open cells not permitted.

.4 Concrete masonry units shall have face shells and their end joints fully filled with mortar, and joints squeezed tight. Also fill webs at cores, to be reinforced and grouted, and strike flush at core taking care to prevent mortar from falling into core.

.5 Tie intersecting non-bearing walls together with masonry reinforcing every second course.

.6 Do not tie intersecting bearing walls together in masonry bond, except at corners.

.7 Exercise special care laying up concrete block in locations where plastic wall coating finish is indicated. Block walls in these locations shall be plumb with joints tooled, concave.

.8 Where resilient base is indicated, tool the joints to within 100mm of the floor. Cut joints flush behind the base.

.9 All concrete block at parapets shall be filled solid. Install building paper and wire mesh reinforcing in the bed below solid fill.

## 3.3 MORTAR AND POINTING

.1 Mortar is specified in Section 04 05 13.

.2 Make all joints uniform in thickness, straight, in line, with mortar compressed to form concave joints.

.3 Strike joints flush where walls are to receive insulation, ceramic tile, or similar finishes.

.4 Point faced blockwork by filling holes and cracks in exposed mortar joints. Cut out defective joints, refill solidly with mortar and tool to form neat concave joint.

## 3.4 BUILDING IN COMPONENTS

.1 Build in door and window frames, steel lintels, sleeves, anchor bolts, anchors, nailing strips and other items to be built into masonry. Install windows using clip angles supplied by window manufacturer and co-operate with subcontractors installing windows, entrances and screens.

.2 Do not distort metal frames. Bed anchors of frames in mortar and fill frame voids with mortar or grout as wall is erected.

## 3.5 BEARING POINTS

.1 Fill concrete block solid with 20 MPa concrete grout at the following locations:
- .1 for two courses below bearing points of structural members;
- .2 where ladders are bolted to walls;
- .3 where benches, shelves, cubbies, coat racks, J-hooks and other items are supported on walls;
- .4 behind wall-hung mechanical fixtures;
- .5 and elsewhere as indicated on drawings.

.2 Install building paper over wire mesh reinforcing in the beds below solid block section.

.3 Use 100% solid concrete blocks where indicated.

3.6 **CONTROL JOINTS**

.1 Provide continuous vertical control joints in concrete block and brick partitions and walls at locations indicated, and at maximum 4.0m o.c. Control joints may be at 6.0m o.c. for autoclaved block only.

.2 Control joints are required at changes in wall height, at pilasters and changes in wall thickness, at movement joints in foundations and floors and roofs, at one side of door or window openings under 1.8m wide, on both sides of openings over 1.8m wide, and adjacent to corners.

.3 Confirm all control joint locations with the Consultant prior to wall construction. Provide drawings marked up to show locations of all control joints.

.4 Form control joints as detailed. Stop masonry reinforcing each side of joints; except where structural reinforcing is required, such as at bond beams.

.5 Provide bond breaker at each control joint, of building paper or black polyethylene. Continue bond breaker over lintels at openings.

.6 Control joints and bond breaker to be continuous from floor to roof, including any horizontal portions of a control joint. Review details with Consultant on site.

3.7 **HORIZONTAL REINFORCING**

.1 Refer to structural drawings for requirements for masonry reinforcing.

.2 Cavity wall and concrete block walls above & below grade shall be continuously reinforced and tied together with horizontal masonry reinforcing in every second block bed joint.

.3 Additionally place masonry reinforcing in first and second bed joints above and below openings. Reinforcing in first bed joint shall be continuous. Second bed joint reinforcing shall extend 600 mm beyond each side of opening.

.4 Place continuous reinforcing in second bed joint below top of wall.

.5 Lap reinforcement minimum of 150mm at splices. Supply & install prefabricated sections at corners and intersection of walls to insure continuity of reinforcing.

3.8 **CUTTING MASONRY**

.1 Cutting of masonry units exposed in finished work shall be done with approved type power saw. Where electrical conduit outlet or switch boxes occur, grind and cut units before services installed. Quick saw not permitted for cutting block above grade.

.2 Obtain Consultants approval before cutting any part or area which may impair appearance or strength of work.

.3 Patching of masonry not permitted without Consultants approval.

3.9 **COORDINATION**

.1 Provide openings in masonry walls where required or indicated. Provide reinforced lintels over all openings in both loadbearing and non-loadbearing walls.

.2 Accurately locate chases and openings, and neatly finish to required sizes. Refer to Mechanical and Electrical drawings and co-operate with all trades.

.3 Where masonry encloses conduit or piping, bring to proper level indicated and as directed. Do not cover any pipe or conduit chases or enclosures until advised that work has been inspected and tested.

.4 Extend vapour barrier at window, door, and louvre openings and at tops of walls for building in to frames and flashings as detailed.

.5 Build in frames and anchor bolts, and metal brackets for vanities, benches, coat racks, etc.

.6 Coordinate with forces installing lateral support angles and acoustic insulation at the tops of non-load bearing masonry partitions.

3.10 **CLEANING**

.1 On completion, remove excess mortar and smears using wood paddles or scrapers.

.2 Point or replace defective mortar to match existing, as required or directed.

.3 Clean concrete masonry walls exposed in the finished work in accordance with manufacture's recommendations and NCMA TEK Bulletin #8-4A.

.4 Remove efflorescence from masonry walls exposed in the finished work in accordance with manufacturer's recommendations and NCMA TEK Bulletin #8-3A.

.5 Remove dirt and stains from masonry walls exposed in the finished work in accordance with manufacturer's recommendations and NCMA TEK Bulletin #8-2A.

.6 Repeat cleaning operations until work is satisfactory.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 RELATED WORK

| | | |
|---|---|---|
| .1 | Finish Carpentry | Section 06 20 00 |
| .2 | Architectural Casework | Section 06 41 16 |
| .3 | Built-up Bituminous Roofing | Section 07 51 00 |
| .4 | Painting | Section 09 90 00 |
| .5 | Mechanical | Divisions 20, 21, 22, 23, 25 |
| .6 | Electrical | Divisions 26, 27, 28 |

### 1.2 SHOP DRAWINGS

.1 Submit Shop Drawings in accordance with Section 01 33 23. Show and describe detail work of this Section including large scale details of members and materials, of connections, joining details, anchorage devices, dimensions, gauges, thicknesses, description of materials, metal finishing specifications, as well as all other pertinent data and information.

.2 Indicate field dimensions on shop drawings.

.3 Shop drawings for shall be stamped by a professional structural engineer, registered in the Province of Ontario, retained by the Contractor, who shall be responsible for the structural design of metal fabrications.

### 1.3 FABRICATION

.1 Design, fabricate and erect structural steel members in accordance with CAN/CSA-SI6.1.

### 1.4 INSPECTION AND TESTING

.1 The Owner will appoint a Testing and Inspection Company who shall ensure that the deflection and lateral support angles for non-loadbearing masonry walls have been securely anchored to wall and to structure above.

.2 The cost of this testing and inspection shall be paid through the Cash Allowance included in the Contract; refer to Section 01 10 00.

.3 Contractor shall cooperate with inspectors and provide full access to all places where the work is being performed.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

.1 Structural Steel: to CAN/CSA - S161.1; CAN/CSA-G40.20/G40.21.

.2 Welding Materials: to CSA W59, CSA W55.3 for stainless steel, ASTM A371; for aluminum, ASTM B 285 and CSA-S244.

.3 Sheet Steel: wiped coated, ASTM A 446; structural quality Grade A or B, maximum permissible working stress, Grade A 137,895 kPa, Grade B 154, 442 kPa.

.4 Prime Paint: CGSB 1-GP-40 M.

.5 Bituminous Paint: CGSB-1-GP-108 M.

.6 Zinc-Rich Coating: organic zinc rich coating, "ZRC 221 Cold Galvanizing Compound" by ZRC Worldwide.

.7 Steel pipes: to CAN/CSA-G40.20 type 300W.

.8 Galvanizing: to CAN/CSA G164, G90.

.9 Sheet Aluminum: 2mm thick, clear anodized, satin finish.

.10 Stainless Steel: Type 304 for interior work, Type 317 for exterior applications, No. 4 brushed finish

.11 Reflective Tape: 3M Diamond Grade Fluorescent Yellow Conspicuity Markings; 50mm wide fluorescent, retroreflective tape for exterior applications.

.12 EPDM Gasket: Continuous gasket fabricated of 19mm thick, by minimum 19mm wide, 40 durometer EPDM flat cord, as manufactured by Budlar Flexible Products Inc., or approved equivalent.

.13 Bolts and anchors bolts: to ASTM A307-82A.

.1 Supply angles, bolts, anchors, sleeves and any other attachments to structure necessary for the installation of work under this Section.

## PART 3 - EXECUTION

### 3.1 WORKMANSHIP

.1 Use only workmen skilled in the Work of this Section. Do work to best standard practice and in accordance with applicable laws, by- laws and regulations. Conform to the requirements of Authorities Having Jurisdiction.

.2 Fit and assemble work in shop where possible. Execute work according to details and reviewed shop drawings. Where shop fabrication is not possible, make trial assembly in shop.

.3 Welding: to CSA W59. File or grind exposed welds smooth and flush, so as to be invisible after painting.

.4 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 in true plumb, true, square, straight, level and accurate to sizes and shapes detailed, free from distortion or defects detrimental to appearance or performance.

.5 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.

.6 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.

.7 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.

.8 Thoroughly clean all ferrous metals, by methods suitable to remove burrs, weld spatter, rust, loose mill scale, oil, grease, dirt and other foreign matter. Apply one coat of prime paint to all surfaces except those requiring field welding. Brush on thoroughly and work well into all crevices.

.9 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.

.10 Galvanize all exterior work. Do all galvanizing after welding.

.11 After installation, remove any rust and touch up all galvanized work with two coats zinc rich coating.

.12 Finish painting is specified in Section 09 90 00.

3.2 **SUPPORT STEEL**

.1 Provide and install miscellaneous structural steel supports and any other steel fabrications required.

3.3 **LATERAL SUPPORT FOR MASONRY**

.1 Provide deflection and lateral support angles for non-loadbearing masonry walls in accordance with Section 04 22 00. Install on both sides of wall.

.2 Lateral support noted below is a minimum requirement; provide lateral support as indicated on structural drawings where it exceeds these requirements.

.3 For interior walls with concealed tops parallel with joists provide steel angles 90mm x 90mm x 6mm x 150mm long on both sides of wall, at maximum1200mm o.c. Anchor angle to underside of structure with suitable inserts and bolts.

.4 Where wall is directly below joist, provide steel angles 90mm x 90mm x 6mm x 150mm long at maxium1200 o.c. welded to bottom cord of joist on each side of wall. Coordinate with forces providing drywall enclosure at joist above wall.

.5 For interior walls with concealed tops perpendicular to joists, provide steel angles 75mm x 75mm x 6mm x 150mm long, welded to bottom chord of each joist.

.6 For interior walls with exposed tops provide 75mm x 75mm x 6mm continuous steel angles. Anchor angles in an approved manner.

.7 Coordinate with forces installing acoustic insulation in gaps at top of partitions, to ensure insulation is installed before lateral support angles.

3.4 **MISCELLANEOUS ITEMS**

.1 Examine the drawings and provide all metal brackets and supports detailed or indicated, with the exception of items included in custom cabinetry.

.2 Anchor Bolts, Lag Screws, etc.: Supply anchor bolts, washers and nuts, lag screws, expansion shields, toggles, straps, sleeves, brackets, etc. where required or called for on Drawings for work of this Section. Such items occurring on or in exterior wall or slab shall be hot dipped galvanized. Thread dimensions shall be such that nuts and bolts fit without re-threading or chasing threads.

.3 Miscellaneous Sections: Provide all miscellaneous steel angles, channels, tubes, plates, etc. of shapes and sized noted or required which are not included on Structural Drawings or called for in other Sections of the Specifications.

.4 Upstands at roof framing: Provide 18 ga. galv. sheet steel, bent to shape as detailed.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 RELATED WORK

| | | |
|---|---|---|
| .1 | Concrete formwork | Section 03 30 00 |
| .2 | Finish Carpentry | Section 06 20 00 |
| .3 | Modified Bituminous Membrane Roofing | Section 07 52 00 |
| .4 | Sheet Metal Flashing & Trim | Section 07 62 00 |
| .5 | Hollow Metal Doors and Frames | Section 08 11 13 |
| .6 | Door Hardware | Section 08 71 00 |
| .7 | Painting | Section 09 90 00 |

### 1.2 REFERENCES

| | | |
|---|---|---|
| .1 | CAN/CSA O80-Series | Standards for Wood Preservation |
| .2 | CSA O121 | Douglas Fir Plywood |
| .3 | CSA O141 | Softwood Lumber |
| .4 | CSA O151 | Canadian Softwood Plywood |
| .5 | CSA B111 | W ire Nails, Spikes and Staples. |

.6 National Lumber Grading Authority (NGLA), Standard Grading Rules for Canadian Lumber

### 1.3 DELIVERY AND STORAGE

.1 Do not deliver materials until they are required for incorporation into the work.

.2 Protect materials, under weatherproof cover, both in transit and on site.

.3 All exterior and interior finish materials shall, upon delivery, be neatly stored in a dry place and shall be protected from damage due to weather, water, or any other cause.

### 1.4 PROTECTION

.1 Protect fire-retardant materials against high humidity and moisture.

.2 Protect countertops and cabinets with 6 mm plywood or other suitable sheet material.

.3 Protect installed hardware from damage and blemishes.

## PART 2 - MATERIALS

### 2.1 MATERIALS

.1 Wood materials: straight, sawn square, true, dressed four sides, properly sized and shaped to correct dimensions from nominal sizes indicated or specified.

.2 Lumber grade and moisture content:
- .1 comply with the official grading rules of NLGA for the particular lumber and grade, and structurally complying with the latest requirements of the Ontario Building Code.
- .2 Comply with CSA Standard O141 Softwood Lumber. Use only grade marked lumber.

.3 All wood materials:
- .1 well seasoned NLGA, free from defects which impair strength and durability.
- .2 Moisture content limit:
  - .1 S-GRN: Unseasoned
  - .2 S-DRY: Maximum 19% moisture content
  - .3 KD: Maximum 15% moisture content

.4 Pressure Treated Lumber to CSA O80.

.5 Blocking, cant strips, grounds, nailing strips:
- .1 NLGA No. 2 Ontario White Pine, No. 2 Red Pine, all complying with the grading rules of the NLGA for Construction,
- .2 Douglas Fir dense complying with COFI standard grading and dressing rules.

.6 Douglas Fir plywood:
- .1 all veneer play; comply with CSA Standard O121, COFI Exterior.
- .2 Western softwood plywood - comply with CSA Standard O151, COFI Waterproof glue WSP. Exposed two sides shall be grade G2S, and exposed one side shall be grade G1S.
- .3 Plywood over steel deck at canopies shall be 19mm thickness, waterproof, tongue and grooved ply.

.7 Wood preservative
- .1 Pentox Green preservative and Osmose Cut End preservative, as manufactured by Osmose Pentox Inc.; Pentox Conservator Clear for painted wood.
- .2 For painted surfaces use clear type and for concealed surfaces use green tinted type.

.8 Fire Retardant Treatment: To ULC S102; flame spread rating 25 or less.

.9 Rough hardware:

- .1 nails, screws, bolts, lag screws anchors, special fastening devices and supports as required for the erection of all carpentry items.

- .2 For preservative treated wood, use only stainless steel hardware, with the following exception:
  - .1 where galvanized steel items, such as gates, flashings, etc., are being attached to wood, galvanized steel fasteners shall be used.

- .3 Do not mix stainless steel with galvanized steel; contact of these dissimilar metals can cause galvanic corrosion.

- .4 Stainless steel hardware to be type 317.

.5 Galvanized hardware must be hot-dipped galvanized as follows:
- .1 fasteners meeting CAN/CSA-G164 minimum zinc coating of 600 g/$m^2$ (ASTMA153 Class A or B1 G185)
- .2 connectors meeting CAN/CSA-G164 minimum zinc coating of 600 g/$m^2$ (ASTM A653 Class G-185 sheet) or better.
- .3 Electroplated galvanized hardware is not permitted.

## PART 3 - EXECUTION

### 3.1 PREPARATION

.1 Examine surfaces to receive the work of this Section and proceed only when conditions are satisfactory for a proper installation.

.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. Join work only over solid backing.

### 3.2 INSTALLATION - GENERAL

.1 Provide running members of the longest lengths obtainable.

.2 Slowly feed machine-dressed members using sharp cutters. Provide finished members free from drag, feathers, slivers or roughness of any kind. Remove machine marks by sanding.

.3 Machine sand surfaces exposed in the finished work and hand sand to an even smooth surface free of scratches.

.4 Properly frame material with tight joints and rigidly secure in place. Use glue-blocks were necessary.

.5 Design construction methods for expansion and contraction of the materials.

.6 Conceal joints and connections wherever possible. Locate prominent joints only where directed.

.7 Match joints made on the site with joints made in the shop.

.8 Unless otherwise specified glue and blind screw or nail all work. Set and fill and plug surface screws using matching wood plugs.

.9 Accurately scribe, cope and mitre members where required to produce hairline joints.

.10 Erect work plumb, level, square and to the required lines.

.11 Do not regard blocking, strapping and other rough carpentry indicated as complete or exact. Provide rough carpentry items required for the installation of the Work of other Sections.

.12 The use of pressure treated wood is required for the following:
- .1 Wood in direct contact with the ground or framed into concrete below ground level.
- .2 Structural wood elements within 150mm of ground.
- .3 In termite areas, for all structural wood elements within 450mm of ground.
- .4 Wood framing members without a dampproof membrane separating the wood framing member from concrete in contact with the ground.
- .5 Building components where moisture may accumulate.
- .6 Retaining walls.

.13 Aluminum must not be in direct contact with pressure treated wood. Provide minimum 6mm spacing between aluminum products and treated wood, with10mil polyethylene barrier and polyethylene or nylon spacers.

## 3.3 INSTALLATION - ROUGH CARPENTRY

.1 Blocking and Grounds: Fasten wood nailers, blocking, bucks, grounds curbs, copings and strapping solidly to supporting materials in true planes so that they will remain straight and not be loosened by work of other Trades.

.2 Framing: Do all wood framing in accordance with the Ontario Building Code, latest version, and to CAN 3 086 as applicable.

.3 Wood Cants, Copings:
- .1 Fasten wood cant blocking to structure with 19 mm. dia. bolts 760mm o.c.
- .2 Fasten curbs as indicated.
- .3 Wood cants, curbs and copings to be preservative treated. Plywood to be exterior grade.
- .4 Coordinate dimensions of curbs with manufacturer of pre-manufactured curb caps at tunnel skylights.

.4 Preservative:
- .1 Apply preservative to concealed wood members in contact with exterior walls and roof before fixing in place.
- .2 Apply preservative to all cut ends of pressure treated wood.
- .3 Preserve all other wood indicated to be preserved. Use clear preservative for items to be painted.
- .4 Preserve wood by immersing in preservative for at least one hour.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 WORK INCLUDED

.1 All finished wood items and trim, other than custom cabinetry, shown on drawings or in architectural details included in Volume 2 of the Project Manual.

### 1.2 RELATED WORK

| | | |
|---|---|---|
| .1 | Metal Fabrications | Section 05 52 00 |
| .2 | Rough Carpentry | Section 06 10 00 |
| .3 | Architectural Casework | Section 06 41 13 |
| .4 | Plastic Laminate Work | Section 06 41 14 |
| .5 | Painting | Section 09 90 00 |

### 1.3 DELIVERY AND STORAGE

.1 Protect materials against high humidity and moisture at all times.

## PART 2 - MATERIALS

### 2.1 MATERIALS

.1 Wood materials - straight, sawn square, true, dressed four sides, properly sized and shaped to correct dimensions from nominal sizes indicated or specified.

.2 Lumber grade and moisture content - comply with the official grading rules of NLGA for the particular lumber and grade, and structurally complying with the latest requirements of the Ontario Building Code. Comply with CSA Standard 0141 Softwood Lumber. Use only grade marked lumber.

.3 All wood materials - well seasoned NLGA, free from defects which impair strength and durability. Moisture content limit: S-GRN: Unseasoned; S-DRY: Maximum 19% moisture content: KD: Maximum 15% moisture content.

.4 Hardwood Lumber: Clear maple, suitable for clear finish
Clear oak, suitable for clear finish

.5 Douglas Fir plywood - comply with CSA Standard 0121, COFI Exterior. Exposed two sides shall be grade G2S, and exposed one side shall be grade G1S

.6 Canadian Softwood Plywood - comply with CSA Standard 0151, COFI Waterproof glue WSP. Exposed two sides shall be grade S2S, and exposed one side shall be grade S1S.

.7 Hardwood plywood - conforming to CSA 0115 and AWMAC. Birch or maple ply for stain finish, where noted on drawings.

.8 Fasteners:

.1 Wood screws: electroplated, to CSA-B35.4

.2 Nails and Staples: to CSA-B111

## PART 3 - EXECUTION

### 3.1 PREPARATION

.1 Examine surfaces to receive the work of this Section and proceed only when conditions are satisfactory for a proper installation.

### 3.2 INSTALLATION - GENERAL

.1 Provide running members of the longest lengths obtainable.

.2 Slowly feed machine-dressed members using sharp cutters. Provide finished members free from drag, feathers, slivers or roughness of any kind. Remove machine marks by sanding.

.3 Machine sand surfaces exposed in the finished work and hand sand to an even smooth surface free of scratches.

.4 Properly frame material with tight joints and rigidly secure in place. Use glue-blocks were necessary.

.5 Design construction methods for expansion and contraction of the materials.

.6 Conceal joints and connections wherever possible. Locate prominent joints only where directed.

.7 Match joints made on the site with joints made in the shop.

.8 Unless otherwise specified glue and blind screw or nail all work. Set and fill and plug surface screws using matching wood plugs.

.9 Accurately scribe, cope and mitre members where required to produce hairline joints.

.10 Erect work plumb, level, square and to the required lines.

### 3.3 SHELVING

.1 Provide plywood shelving to all custom fabricated shelving and storage units. Install on metal brackets fabricated under Section 05 52 00.

.2 Refer to Architectural plans and detail drawings.

## 3.4 WOOD TRIM

.1 Supply and install all wood trim, for clear finish, where shown on drawings and details including, but not limited to, the following:

.1 Solid maple trim at control panels.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 RELATED WORK

| | | |
|---|---|---|
| .1 | Rough Carpentry | Section 06 10 00 |
| .2 | Finish Carpentry | Section 06 20 00 |
| .3 | Countertops | Section 06 41 19 |
| .4 | Door Hardware | Section 08 71 00 |
| .5 | Glazing | Section 08 81 00 |
| .6 | Resilient Base | Section 09 65 00 |
| .7 | Painting | Section 09 90 00 |
| .8 | Tackboard | Section 10 11 00 |
| .9 | Mechanical Work | Division 15 |
| .10 | Electrical Work | Division 16 |

### 1.2 QUALIFICATIONS

.1 The Work of this Section shall be provided by a specialist millwork firm established in Ontario for a minimum of five years and able to produce evidence of satisfactory completion of quality casework comparable with Work specified under this Section.

.2 All Work to conform to minimum standard for premium Grade Work as specified in Quality Standards for Architectural Woodwork prepared by Architectural Woodwork Manufacturers Association of Canada.

### 1.3 INTENT

.1 The intent of this Section is that the 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. Touch up finish immediately prior to completion of the Work and leave in perfect condition.

### 1.4 SUBMITTALS

.1 Submit Shop Drawings of all finish carpentry, in accordance with Section 01 33 23.

.2 Draw Shop Drawings in related and/or dimensional positions with sections. Scale minimum 1:10.

.3 Shop Drawings shall show fabrication details, materials, jointing, description of anchorage and hardware. Dimensions shall be based on actual measurements taken at the Site. Provide details and dimensions for all fittings and the like for mechanical and electrical connections to this work.

.4 Provide shop drawing indicating method of attachment of wall hung items. Drawing shall be sealed by a registered professional engineer, who shall certify that the attachment materials and methods are appropriate for the expected loading and seismic considerations.

.5 Submit samples of materials, construction method and wood stain finish for Consultant's approval.

.6 Submit samples of all hardware.

.7 Submit one full size sample of proposed units, of type selected by Consultant, prior to proceeding with the remainder of cabinet work.

1.5 **CO-OPERATION**

.1 Co-operate with other Sections and do all cutting, fitting and making good of own work for all Sections as may be necessary to carry out the true intent of the Drawings and Specifications. Examine the work and materials installed by others insofar as it affects this Work, and report to Consultant any such work not done properly.

1.6 **OWNER'S APPLIANCES**

.1 The following standard appliance dimensions shall be followed:

| | | |
|---|---|---|
| .1 | Refigerator 18.2 cu. ft. - | 32.63"d x 65 3/8"h x 29.63"w (829mm D x 1660.5mm H x 754mm W) |
| .2 | Refrigerator 4.4 cu. ft. - | 33"h x 21"d x 20 1/2"w (838.2mm H x 533.4mm D x 520.7mm W) |
| .3 | Stove 30" - | 26.25"d x 46.88"h x 29.88"w (667mm D x 1091mm H x 759mm W) |
| .4 | Cooktop 36" - | 3/4"h x 20 7/8"d x 36"w (934mm H x 531mm D x 914.4mm W) |
| .5 | Wall Mount Oven 27" - | 25.37"d x 31.12"h x 26.87"w |
| .6 | Microwave 1.1 cu. ft. - | 15.16"d x 12.1"h x 20.2"w |
| .7 | Microwave 2.0 cu. ft. - | 35.56"h x 49.53"d x 60.96"w |
| .8 | Dishwasher - | 24.5"d x 34.5"h x 23.88"w (622.3mm D x 876.3mm H x 606.5mm W) |
| .9 | Washer / Dryer Combo (stackable spacesaver) - | 74 1/2"h x 27 1/4"d x 24"w (1892mm H x 692mm Dx 609.6mm W) |
| .10 | Washer - | 3.2 cu. ft. - 42"h x 25 1/2"d x 27"w (1067mm H x 648mm D x 686mm W) |
| .11 | Dryer - 6.0 cu. ft. - | 42"h x 25 ½ "d x 27"w (1067mm H x 648mm D x 686mm W) |

1.7 **MEASUREMENTS**

.1 Take necessary measurements at the Building of spaces and conditions to which work must conform or through which access is required. Take such measurements prior to fabrication of the Work of this Section and in ample time to avoid delays in the Work.

1.8 **DELIVERY AND STORAGE**

.1 Do not deliver finished material during rain or damp weather or until "Wet Trades" have completed their work and windows are glazed or covered. Carefully protect from damage of any kind.

1.9 **WARRANTY**

.1 Provide an extended Warranty to **two (2) years** from date of Substantial Performance of the Contract.

.2 The warranty shall cover replacing, reworking and/or refinishing to make good defects in architectural woodwork due to faulty workmanship or defective materials, which appear during this two (2) year period. Work showing defects during this period shall be replaced or made good without delay and at no cost to Owner.

## PART 2 - MATERIALS

### 2.1 MATERIALS

.1 All wood must be straight and true, dressed 4 sides and conform to details. It must conform to official grading rules of Canadian Lumberman's Association for quality and moisture content. It must conform to NBC Structural requirements and be grade stamped according to CSA Standards 0140 or 0151. Stained woods and plywoods must be selected for colour and grain uniformity.

.2 Softwood Lumber: Conform to CAN/CSA 0141 and National Lumber Grades Authority requirements.

.3 Hardwood Lumber: Conform to National Hardwood Lumber Association (NHLA) requirements. Birch for stain finish to AWMAC Premium Grade.

.4 Hardwood Plywood: Conform to CSA 0115 and AWMAC. Birch veneer plywood for natural finish. Exposed faces to be natural grade per AWMAC. Interior of doors to be classified as exposed face.

.5 Canadian Softwood Plywood: Veneer plywood conforming to CSA 0151.

.6 Douglas Fir Plywood: Veneer plywood conforming to CSA 0121.

.7 Poplar Plywood: Veneer plywood conforming to CSA 0153.

.8 Wood Particleboard:

.1 fabricated from 100% recycled or recovered wood fibre, containing no added urea formaldehyde, and certified by the Forest Stewardship Council (FSC). Conform to ANSI A208.1/Grade M-2, with formaldehyde emissions of 0.09 ppm or less.

.2 Nu Green 2 Particleboard as manufactured by Uniboard, or equal by Panolam Industries or Flakeboard.

.9 Hardboard: Conform to CGSB 11-GP-3M.

.10 Melamine panels:

.1 Panval by Uniboard Canada Inc., incorporating Nu Green 2 particle board, or ZCore Melamine Panels by Panolam Industries or Flakeboard melamine panels with Vesta particleboard core.

.2 Edging shall be 3mm polyvinyl chloride (P.V.C.) in colour to match melamine face.

.3 Materials shall conform to ANSI A208.1 Nema Standards and ALA 1992. Colour to be selected by Consultant. Provide samples to Consultant for approval.

.4 Melamine sheets to be thermally fused with phenolic resin to particle board core.

.11 Plastic Laminate: Refer to Section 06 41 19 for plastic laminate work.

.12 Nails and Staples: Conform to CSA B111.

.13 Wood Screws: Steel, of types and sizes to suit applications

.14 Glue: Adhesives to be urea formaldehyde free, low or no VOC . All adhesives to conform to CSA 0112 Series.

.15 Glass and glazing: Refer to Section 08 81 00.

.16 Expanded Metal: Flattened expanded metal sheets, 3/4" No. 16F, galvanized.

.17 Wood Doors:
- .1 All tall cabinet doors shall be 45mm solid core, plastic laminate clad, flush slab doors.
- .2 Doors shall be made of materials that are low VOC emitting, FSC approved, and with no added urea formaldehyde.
- .3 Doors to have 16mm minimum hardwood edges, to match face of door.
- .4 Solid Core Doors to have urea formaldehyde-free, solid mat formed particle board core, density 449kg/$m^3$, conforming to CSA-O188.
- .5 Plastic Laminate on doors must match colour of melamine exactly.
- .6 Doors to be as manufactured by Baillargeon Door Inc., Masonite, Lambton Doors, JWS Manufacturing Inc., or VT Industries. Plastic Laminate on doors must match colour of melamine exactly.

.18 Wood Finish:
- .1 Stain, sealer and varnish system
- .2 The individual components of the system used must be chemically compatible to assure perfect adhesion and a top quality, durable final finish.
- .3 Finish to be of colour as later selected.
- .4 VOC emissions shall conform to the limits set by regulation SOR/2009-264 under the Environmental Protection Act.
- .5 Refer to item 2.6, Furniture Finishing (Wood), below.

.19 Rod with Hooks: as manufactured by Architectural School Products or Global School Products. Refer also to section 10 95 00.

.20 Furniture Glides: Shepherd Hardware Products Surface Grip Anti-Slip Pads #9646 screw-on glides, 50mm diameter pads with screws.

.21 Insulation: Dow “Thermax” Sheathing, foil-faced rigid board insulation, 19mm thickness.

2.2 **CABINET HARDWARE**

.1 The hardware specified herein is to be provided as listed. Any proposed substitutions must be submitted to the Consultant for approval prior to shop drawing submission. Proposed substitutions must be equal or better quality than the specified items and will only be considered

based on the following criteria:

.1 Hinges: hinges must be as specified

.2 Locks: locks shall lock double doors simultaneously, eliminating the need for elbow catches at the second door.

.2 Furnish and install all hardware to custom cabinetry as follows:

| Hardware for 19mm thick cupboard doors | | | Finish |
|---|---|---|---|
| Hinges | Blum | Blumotion | NI |
| Catches | Richelieu | 807V | 603 |
| Pulls | Richelieu | 33205-170, 153 x 28mm | 304 stainless |
| Strike Plates | Hafele | door catch:239.61.319<br>gable catch: 239.61.319<br>bottom slot: 239.08.705 | black |

| Hardware for drawers | | | |
|---|---|---|---|
| Slides | Knape & Vogt | 8650 FM (length to suit) | Zinc |
| Pulls | Richelieu | 30135-170, 153 x 28mm | C32D |
| Flush Pulls (Science Rooms) | Knape & Vogt | 819X | ANO |
| Strike Plate | Hafele | 239.08.705 | black |

| Hardware for Adjustable Wood Shelves | | | |
|---|---|---|---|
| Pilaster Strips | Knape & Vogt | 255 ZC Steel | Zinc |
| Shelf Clips | Knape & Vogt | 256 ZC Steel | Zinc |
| Shelf Clips with cross support, for upper shelves | Knape & Vogt | 243 ZC Steel | Zinc |

| Hardware for 45mm thick cupboard doors | | | Finish |
|---|---|---|---|
| Hinge | Stanley | F179 114x102 | C15 |
| Lockets - Tall Storage Units | Sargent | 6G38-2 OB, with outside knob and inside T-turn | C26D |
| Locksets for Teachers Closets | Lockset Complete with Interchangeable Cylinder Supplied by Finishing Hardware Supplier | | |
| Closet rods & flanges | Knape & Vogt | 660 SS 30mm OD rod<br>730 end caps<br>734 & 735 end supports<br>760 intermediate support | C32<br>ANO<br>CHR<br>ANO |
| Roller Catches | Onward | 504N | C26 |
| Surface Bolts | Ives | 043-4 | C15 |

| Hardware for 45mm thick cupboard doors | | | Finish |
|---|---|---|---|
| Door Stop/Holder | Rixson | "Checkmate" 10 Series Adjust. Standard Duty Surface Mounted | 630 |
| Coat Hooks (2 / Teachers Closet) | Ives | 507, cast brass, Coat & Hat Hook | B26D |

Linear Grilles

.1 Nailor Industries linear bar grilles, model 49-240-E-SA-C-MM, in sizes and capacities shown on drawings and mechanical air flow schedules.
.2 Provide alignment strips for linking continuous sections,
.3 Frames to be narrow profile, extruded aluminum with satin anodized finish, with mitred corners and concealed fasteners.
.4 Provide pre-manufactured inside and outside corners at vertical applications at base of cabinetry.
.5 Provide all fasteners.

2.3 **FABRICATION - GENERAL**

.1 Check job dimensions and conditions and notify the Consultant in writing of unacceptable conditions. Do not proceed until remedial instructions are received.

.2 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.

.3 Fabricate work square and to the required lines. Recess and conceal fasteners and anchor heads. Fill with matching wood plugs. All fixed elements must be glued and screwed or dowelled to ensure rigid construction.

.4 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.

.5 Make all necessary cut-outs in the furniture for sinks 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.

.6 Provide and install pipe covers, scribing pieces, top, bottom and/or and closures and filler panels where necessary, including wherever units require furring out or blocking to existing conduits, pipes, etc.

.7 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.

.8 Provide trim at dishwashers and other under-counter appliances, after installation of appliances.

.9 Resilient base around all toe spaces is specified in Section 09 65 00.

2.4 **CABINET CONSTRUCTION**

.1 Finish all sides of each cabinet module, including concealed sides, to permit future relocation of units.

.2 All exposed edges of melamine to have 3mm PVC edging, as specified above. All other edges to be sealed and moisture proofed before assembly.

.3 *Melamine panels are not to come into contact with the floor*. Provide all floor cabinets with 115mm high base of 19 mm water resistant plywood. Coordinate height of plywood base with height of resilient base supplied. Set plywood base back from front face of cabinets minimum 75mm to provide toe space. Provide one coat of sealer to plywood base; ensure compatibility with resilient base adhesive.

.4 Plywood base must be concealed by resilient base. Coordinate with forces installing rubber base. Where any part of the plywood base will be exposed above the rubber base, after levelling on site, cover with plastic laminate to match millwork.

.5 Resilient base around all toe spaces is specified in Section 09 65 00.

.6 All cabinet work shall be factory assembled in modular, unitized construction. Carefully machine with dovetailed mortised and tenoned or blind dado joints. Each unit shall be self supporting and designed to be bolted together with fasteners inside units with plastic plugs over fasteners. All joints to be securely glued. Fabricate units as per Drawings and as specified.

.7 Gables to be 19mm thick melamine panels, with PVC edging on all exposed edges.

.8 Provide top front, top back rails and posts of solid hardwood 19mm x 50mm framing members, tongue and grooved together and dadoed to gables.

.9 Bottoms to be 19mm thick melamine panels, with PVC edging.

.10 Doors generally to be flush overlay 19mm plywood with plastic laminate finish on all four sides of colour to match door face. Interior face of door to be considered a finished face.

.11 Glazed doors are to be fabricated from 19mm solid wood frames with plastic laminate finish, to match melamine, and matching PVC edges.

.12 Back panels shall be 6mm and 13mm thick melamine panels as detailed, removable within unit where access is required behind. Removable panels to have PVC edge trim, four sides.

.13 Drawer Construction

.1 Fronts: 19mm plywood with plastic laminate finish on all four sides, secured to front of drawer box with minimum 5 screw nails.

.2 Drawer boxes: 13mm solid birch or maple all glued and dovetailed together. Back and front to be tenoned to sides.

.3 Drawer bottom: 6mm tempered hardboard grooved into sides, back and front members.

.4 Provide all drawers with spring hinged stops to prevent accidental removal of drawer. Provide guides and slides for all drawers as specified above, sized for depth of drawer. Top hung drawer slides or grooved drawer sides for runners are not acceptable.

.14 Shelves to be 25mm melamine panels, finished both sides, with PVC edging on all four edges.

.15 Sit all adjustable shelves on pilaster clips. Pilasters to be recessed into gables and fastened with screws. At all adjustable shelves in top half of tall shelving units (above fixed middle shelf), pilaster clips are to be type with cross support; screw to shelves.

.16 Shelving in upper cabinets to be generally 350mm deep unless specifically noted. Provide centre pilaster to all shelves 1200mm long or over.

.17 Provide centre gable to units 1200mm long where glass doors installed and also provide stiffener under bottom at front 25mm x 57mm on all cabinets to prevent deflection.

.18 Provide extended top, bottom and exposed gables where furring out of upper cupboards is required due to pipes, conduits, exhaust ducts, and the like behind to provide a flush face at walls. Extend enclosure to ceiling where necessary to conceal ducts and the like.

.19 Provide continuous linear grills in millwork where indicated on drawings. Provide intermediate supports behind grilles for stability. Indicate supports on shop drawings. Locations and sizes of supports shall not interfere with mechanical or electrical services; coordinate with those subtrades.

.20 Adhere insulation to backs of cabinetry in front of radiant heaters.

.21 At locations of garbage, compost and recycling bins, provide frames with slides for smooth pull out function.

## 2.5 COUNTERTOPS

.1 Provide and install counter tops of types noted on drawings and herein specified. Refer to Section 06 41 19.

## 2.6 FURNITURE FINISHING (WOOD)

.1 Carefully prepare all work to receive finish. Thoroughly sand all wood surfaces to remove machine marks and make dust-free before finishing.

.2 Finish all exterior surfaces and interior of exposed cases with one coat of selected satin, one coat of sealer, sanded smooth, and two coats of finish as specified. Apply finish in accordance with best practice and the resultant finish must be of highest quality for furniture use.

.3 Finish unexposed surfaces with two coats of tinted sealer including backs of all base and wall cabinets, enclosures, etc.

.4 The colour of stain shall be selected by the Consultant. Before proceeding submit prepared 300mm x 300mm finished samples of materials for approval.

## PART 3 - EXECUTION

### 3.1 FABRICATION

.1 Provide running members of the longest lengths obtainable.

.2 Slowly feed machine-dressed members using sharp cutters. Provide finished members free from drag, feathers, slivers or roughness of any kind. Remove machine marks by sanding.

.3 Machine sand surfaces exposed in the finished work and hand sand to an even smooth surface free of scratches.

.4 Properly frame material with tight joints and rigidly secure in place. Use glue-blocks were necessary.

.5 Design construction methods for expansion and contraction of the materials.

.6 Conceal joints and connections wherever possible. Locate prominent joints only where directed.

.7 Match joints made on the site with joints made in the shop.

.8 Unless otherwise specified glue and blind screw or nail all work. Set and fill and plug surface screws using matching wood plugs.

.9 Accurately scribe, cope and mitre members where required to produce hairline joints.

.10 Erect work plumb, level, square and to the required lines.

### 3.2 PREPARATION

.1 Examine surfaces to receive the work of this Section and proceed only when conditions are satisfactory for a proper installation.

### 3.3 INSTALLATION

.1 Set and place all materials and components in place, rigid, plumb and secure.

.2 Provide heavy duty fixture attachments for wall mounted cabinets.

.3 Install all shelving, counter tops and doors.

.4 Use draw bolts in countertop joints.

.5 At junction of plastic laminate counter, back splash and adjacent wall finish, apply small bead of sealant.

.6 Apply water resistant building paper over wood framing members in contact with masonry or cementitious construction.

.7 After installation, fit and adjust operating hardware for wood cabinet doors, drawers and shelves.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 RELATED WORK

| | | |
|---|---|---|
| .1 | Framing and Grounds | Section 06 10 00 |
| .2 | Finish Carpentry | Section 06 20 00 |
| .3 | Custom Cabinets | Section 06 41 13 |
| .4 | Door Hardware | Section 08 71 00 |
| .5 | Plumbing Fixtures | Division 15 |

### 1.2 ALTERNATE PRICE

.1 Plastic laminate countertops and back splashes with top mounted sinks shall form the base bid. Contractor to provide Alternate Price for quartz countertops, back splashes and under-mount sinks.

### 1.3 SUBMITTALS

.1 Refer to Section 01 33 23.

.2 Submit two 300 x 300mm samples of all materials to the Consultant for approval. The samples shall be identified by the project number, date and the name of the contractor the samples shall show colours and details of edging, forming and construction. The materials used in the building shall correspond to the approved samples.

.3 Shop Drawings:
- .1 Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices and other components.
- .2 Show full-size details, edge details, attachments, etc.
- .3 Show locations and sizes of furring, blocking, including concealed blocking and reinforcement required.
- .4 Show locations and sizes of cutouts and holes for plumbing fixtures, faucets, soap dispensers and other items installed in countertops.

.4 Maintenance Data and Materials:
- .1 Submit manufacturer's care and maintenance data, including repair and cleaning instructions. Include in project closeout documents.
- .2 Provide maintenance kit for finishes.

### 1.4 PROTECTION

.1 Refer to General Instructions Section 01 10 00.

.2 Countertop surfaces shall be covered with heavy kraft paper, or tops shall be put in cartons for protection during shipment.

.3 Protect installed countertop surfaces with heavy kraft paper secured in position with masking tape. Do not remove until final inspection.

.4 Comply with the printed directions, issued by the material manufacturers.

1.5 **WARRANTY**

.1 Plastic laminate work shall be warranted against warpage or delamination for a period of two (2) years from the date of Substantial Performance of the Contract.

.2 Stainless steel countertops shall be warranted against warpage or delamination for a period of five (5) years from the date of Substantial Performance.

.3 Epoxy countertops shall be warranted against warpage or defects in manufacture for a period of five (5) years from the date of Substantial Performance.

.4 Work showing defects during the warranty periods shall be replaced or made good without delay and at no expense to the Owner.

## PART 2 - MATERIALS

2.1 **MATERIALS - PLASTIC LAMINATE COUNTERTOPS**

.1 Plastic laminate:

.1 Arborite, Formica, Nevamar, Wilsonart, Lamitech, or Pionite, conforming to CAN3-A172.

.2 1.6mm (.062") thick, general purpose grade for flatwork and 1.25mm (.050") thick standard postforming grade for shaped profiles and bends; finishes to be sued, solid and wood grain colours as later selected by the Consultant from the manufacturers standard range of colours. Balancing sheet shall be the same thickness as surface sheet and shall be supplied by the same manufacturer.

.2 Cores

.1 Particle board core conforming to CAN3-0188.1 Grade H. Surface shall be smooth, dense, and free from loose particles, or defects which will telegraph through the laminate.

.2 Plywood core - fir core, poplar faced, 3, 5, or 7 ply, phenolic bonded plywood conforming to CSA 0121, graded solid faces. Faces and second ply shall be without voids, or fir plywood conforming to CSA 0121, graded solid faces, 3, 5, or 7 ply.

.3 Provide waterproof cores in countertops with sinks, in washrooms and shower areas, and in all other areas where moisture is possible.

.3 Adhesives:

.1 Formulated for use in decorative laminate fabrication and to suit the conditions of application without failure.

.2 Adhesive conforming to CSA 0112 Series, no added urea formaldehyde.

.3 Neoprene or rubber adhesive, solvent base type, of approved manufacturer.

.4 Resorcinol adhesive, conforming to CSA 0112 Series.

.5 Adhesive for countertops where sinks installed is to be water resistant.

.4 Sealer - approved water-resistant sealer or glue.

.5 Draw bolts - mechanical devices of approved manufacture which can be recessed into the core of decorative laminated panels and used to draw two parts together for permanently tight joints.

.6 Fixing clips - 1.6mm. (16 ga.) steel, galvanized (or prime painted), as detailed.

2.2 **FINISH SCHEDULES**

.1 Refer to room finish schedule and drawings for details of countertop work.

2.3 **PLASTIC LAMINATE COUNTERTOPS**

.1 All units shall be shop fabricated. Plastic laminate shall be applied to an approved underlayment with a thermosetting adhesive.

.2 Build work plumb, true and square. Arrange adjacent parts of continuous laminate work to match in colour and pattern.

.3 Obtain the governing dimensions before fabricating items which are to accommodate or abut appliances or equipment.

.4 Veneering of plastic laminate to core material shall be done according to the laminate manufacturer's directions. All veneered work shall be backed with a balancing sheet except where exposed in the finished work, then face veneer to be applied to all exposed surfaces.

.5 Where fabrication is done at the site, laminate and core materials shall be stored in the work area for not less than 48 hours for preconditioning before bonding together.

.6 Form shaped profiles and bends as detailed, using postforming or bending grade according to manufacturer's recommendations. Core and laminate profiles shall coincide to provide continuous support and bond over the entire surface.

.7 Self Edging.

.1 Straight self edging shall be decorative laminate 1.6mm thick.

.2 Curved self edging shall be postformed material or bending grade.

.3 Chamfer exposed edges of laminate uniformly, at approximately 15mm.

.4 Do not mitre the decorative laminate sheet at edges.

.8 Joints

.1 Locate joints where indicated, where not indicated at approximately 2440 or 3660mm centres also include joints at corners, and changes in superficial area.

.2 Accurately fit decorative laminate together to provide tight, flush, butt joints. Joints in cored. panels shall be made with 6mm blind splines and draw bolts, one draw bolt for widths up to 150mm, two or more draw bolts at maximum 450mm o.c. for widths exceeding 150mm.

.3 Seal the core at joints with sealer.

2.4 **CUTOUTS**

.1 Provide cutouts as required for inserts, grilles, appliances, outlet boxes, and other fixtures. Radius the internal corners, chamfer the edges, and seal the core.

.2 Provide face finish, to match countertop material, at cutouts for under counter sinks.

2.5 **EXAMINATION OF SURFACES AND CONDITIONS**

.1 Refer to General Instructions 01 10 00.

.2 Surface and ambient temperatures shall be minimum of 20°C at a relative humidity between 20 to 80%.

**PART 3 - EXECUTION**

3.1 **INSTALLATION - GENERAL**

.1 Install all work plumb, true and square, neatly scribed to adjoining surfaces.

.2 Make allowances around periphery and where fixed objects pass through or project into countertops, to permit normal movement without restriction.

.3 Secure work by concealed means in an approved manner (or as detailed). Fasteners shall not be more than 600mm o.c. and 150mm from edges and ends. Where concealed fastening is not possible use stainless steel trim threaded screws with matching cup washers or other approved means.

.4 Sand or chamfer site cut edges of the laminate free from chips. Radius any internal angle cuts. Seal core edges.

.5 Isolate decorative laminate panels from direct contact with exterior metal frames.

.6 Upon completion of installation remove identification marks and clean surfaces. Protect as specified in 1.4 above.

.7 At junction of counter back splash and adjacent wall finishes, apply small bead of sealant. Note - full height back splash to be provided.

3.2 **TRIM**

.1 Decorative laminate trim shall be as detailed. Joints shall be kept to the minimum, with none occuring in lengths under 3000mm. Slightly bevel the laminate edges of joints. Secure trim with adhesive.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 ROOFING SYSTEM

.1 Where indicated on drawings, roofing work consists of a 2-ply modified bitumen flashings over existing insulation, all in conformance to class A roofing system and CAN/ULC S126.

### 1.2 RELATED WORK SPECIFIED ELSEWHERE

| | | |
|---|---|---|
| .1 | Demolition | Section 02 40 00 |
| .2 | Metal Fabrications | Section 05 52 00 |
| .3 | Wood nailing strips, curbs | Section 06 10 00 |
| .4 | Built-Up Bituminous Roofing System | Section 07 51 00 |
| .5 | Sheet Metal Flashing and Trim | Section 07 62 00 |
| .6 | Rooftop mechanical equipment | Division 23 |
| .7 | Electrical | |

### 1.3 REFERENCES

.1 American Society for Testing and Materials (ASTM)

| | | |
|---|---|---|
| .1 | ASTM C 1177M | Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing. |

.2 Canadian General Standards Board (CGSB).

| | | |
|---|---|---|
| .1 | CGSB 37-GP-9Ma | Primer, Asphalt, Unfilled, for Asphalt Roofing, Dampproofing and Waterproofing |
| .2 | CGSB 37-GP-19M | Cement, Plastic, Cutback Tar. |
| .3 | CGSB 37-GP-56M | Membrane, Modified, Bituminous, Prefabricated, and Reinforced for Roofing |
| .4 | CAN/CGSB-37.29 | Rubber- Asphalt Sealing Compound. |
| .5 | CAN/CGSB - 51.33 | Vapour Barrier Sheet, Excluding Polyethylene, for Use in Building Construction. |

.3 Canadian Roofing Contractor's Association (CRCA)

| | | |
|---|---|---|
| .1 | CRCA Roofing Specifications Manual. | |

.4 Canadian Standards Association (CSA)

| | | |
|---|---|---|
| .1 | CAN/CSA-A123.21 | Standard test method for the dynamic wind uplift resistance of membrane-roofing systems |
| .2 | CSA A123.4 | Asphalt for Constructing Built-Up Roof Coverings and Waterproofing Systems |
| .3 | CSA A231.2 | Precast Concrete Pavers |
| .4 | CSA O80.1-M | Specification of Treated Wood |

.5 Underwriters Laboratories of Canada (ULC)

| | | |
|---|---|---|
| .1 | CAN/ULC-S701 | Thermal Insulation, Polystyrene, Boards and Pipe Covering |
| .2 | CAN/ULC -S702.2 | Standard for Mineral Fibre Thermal Insulation for Buildings |
| .3 | CAN/ULC-S704 | Standard for Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced |

.6 FM Approval Standard 4470 Single-Ply, Polymer-Modified Bitumen Sheet, Built-Up Roof (BUR) and Liquid Applied Roof Assemblies for use in Class 1 and Noncombustible Roof Deck Construction

1.4 **SECTION INCLUDES**

.1 Removal of existing roofing, including stone cover, membrane, membrane flashing, metal counter flashing, deck sheathing, and air/vapour barrier, exposing existing deck.

.2 Provision of complete two ply modified bituminous membrane roof assembly, including air/vapour barrier, insulation, membrane, membrane flashing and metal counter flashing.

.3 The roofing shall be the approved system of one manufacturer, who shall provide the manufacturer's warranty specified herein. Manufacturer shall be responsible for confirming wind uplift resistence.

1.5 **SUBMITTALS**

.1 Submit manufacturer's data sheets for roofing system to be installed, including a list of all products to be incorporated.

.2 Indicate in shop drawings flashings, control joints, tapered insulation details, roof drains and all required roofing materials.

.3 Provide layout for tapered insulation. List materials used.

.4 Do not order materials until drawings have been reviewed and accepted by the Consultant. Submittals to be in accordance with Section 01 33 23 of these specifications.

.5 Submit a draft copy of the roofing material manufacturer's warranty for review and acceptance by the Owner, prior to ordering roofing materials. Warranty shall be accompanied by a letter from the manufacturer confirming the roofing subcontractor as an approved installer of their products.

1.6 **QUALITY ASSURANCE**

.1 Work of this Section shall be performed by skilled specialists having minimum 5 years experience in this trade.

.2 Roofing Subcontractor shall be approved by the roofing materials manufacturer as an installer of their products.

.3 Carry out Work in accordance with recommendations of the Ontario Industrial Roofing Contractors Association (OIRCA) and the Canadian Roofing Contractors Association (CRCA). Use only competent mechanics.

.4 Install all products in conformance with manufacturer's printed instructions.

1.7 **PRODUCT HANDLING**

.1 Store materials on raised platforms in approved manner at Site preceding application, and protect from inclement weather at all times. Roofing felts which become wet will be rejected.

.2 Store roofing felts and insulation in heated atmosphere 21°C for 24 hours before application in cold weather. Tarp all roofing felts.

.3 Store sealants at minimum + 5°C.

1.8 **PROTECTION**

.1 Protect Work of other trades from roofing procedural damage. Cover vertical surfaces with tarpaulins at hoisting locations.

.2 When using open flame in connection with this Work, maintain at all times 3-9 kg dry chemical fire extinguishers fully charged and in operable condition at location where open flames are in use.

.3 Locate kettles at grade level and minimum 2000mm from face of building.

.4 Protect completed portions of roofing from damage due to traffic and materials handling until completion of Work.

1.9 **ENVIRONMENTAL CONDITIONS**

.1 Do not apply roofing materials during rain, fog, snow, or other damp or otherwise unsuitable surfaces.

1.10 **WARRANTY**

.1 Provide both a **five (5) year** Contractor's warranty and a **ten (10) year** Manufacturer's warranty, as specified below.

.2 Furnish a **five (5) year** "Workmanship, Labour and Material" warranty on the complete roofing system, including all materials and labour against leakage, subsurface moisture, degradation of materials and insulation thermal value, failure to stay in place, undue expansion, deformation, delamination, buckles, blisters, ridges and splitting seams.

.3 Contractor's warranty shall include the OIRCA standard warranty for the first two years, plus an additional three years.

.4 Provide a single source manufacturer's total system warranty for all work of this section against defects in materials and workmanship for a period of **ten (10) years**. The written warranty shall be in a form approved by the Owner. The warranty shall cover all components of the roof system; including, but not limited to, the vapour retarder, roof insulation, roof membrane, flood coat/gravel and base flashings. The manufacturer shall supply all labour, materials, tools and equipment to repair and/or replace any material and/or workmanship defects, at no additional cost, for a period of **ten (10) years**. The warranty shall have no dollar limit not be pro-rated over the ten (10) year period.

.5 The warranty period shall commence at the date of issue of the Certificate of Substantial Performance.

.6 Defective work shall include, but not be limited to: leaking, wind uplift, delamination of roofing materials, reduction of thermal value due to moisture in insulation, crazing and ridging.

Dislodged surfacing and degradation of colour that detracts from its performance or visual appearance will also be judged as defective work and will require correction under the Contract.

.7 All defective workmanship and material evident during the period of the Warranty must be repaired to restore the work to good condition and to the original intent of the Drawings and Specifications.

.8 Warranty must cover repairs to other work damaged resulting from defects in the roofing system and from any work to repair said defects.

.9 Within 24 hours of the Owners notification, repair any leaks into the building or roof assembly.

.10 The warranty shall include annual inspections by the roofing trade and manufacturer's agent. Such inspections shall be scheduled with the Owner's maintenance department.

1.11 **INSPECTION AND TESTING**

.1 An independent inspection and testing agency nominated by the Consultant will be appointed to inspect and test roofing and sheet metal work.

.2 Arrange site meeting with Roofing Inspector and Consultant, maximum two weeks prior to commencement of Work on Site. Obtain Inspector's instructions re procedures to be followed.

.3 Co-operate with the Inspector and afford all facilities necessary to permit full inspection of the Work and testing of materials prior to their use. Act immediately on instructions given by the inspector. Where the inspector deems a change is required which will involve a change in cost, obtain Consultants written approval BEFORE proceeding.

.4 Make cut-outs for testing purposes when required and make good roofing at no extra cost to the Owner.

.5 Pay Inspection and Testing Agency from cash allowance in Division 01.

## PART 2 - MATERIALS

2.1 **MANUFACTURERS**

.1 Roofing system shall incorporate the products produced, or approved for use, by one manufacturer, who shall warrant the entire system.

.2 Approved roofing manufacturers are Johns Manville, IKO, Firestone, Soprema, GAF, and Henry Co.

2.2 **MATERIALS**

.1 Sealant: One part polysulphide base, conforming to CAN/CGSB- 19.13. Dymonic by Tremco.

.2 Modified Bituminous Flashing System:

.1 Base Sheet, 1 ply of 180 g/m $^2$ polyester reinforced, SBS modified bitumen base sheet
.1 DynaLastic 180S by Johns Manville, Modiflex MP-180-SS-Base by IKO, Elastophene 180 Sanded by Soprema, or SBS Poly Base by Firestone.

.2 Cap sheet, 1 ply of 180 g/m $^2$, flexible polyester/glass scrim reinforced, fire retardant, white or light grey granular surfaced, SBS modified bitumen cap sheet.
.1 DynaLastic 180 FR Cap by Johns Manville, Modiflex MP-180-Cap by IKO, Sopralene 180 GR by Soprema, or SBS Cap by Firestone.

.3 Vent Pipe & Conduit Flashing: SJ-39 aluminum pre-insulated stack jacks 483mm high, complete with EPDM triple pressure grommet seal and EPDM base seal, by Thaler Metal Industries Inc.

.4 Mechanical & Electrical Flashings:
.1 Thaler Model MERS-600 for single uninsulated pipe.
.2 Model MERS-605A for two pipes, and
.3 Model MERS-630 for single, large diameter insulated pipe
.4 Thaler MEF-9 for gas pipe flashing
.5 Thaler MEF-2 and MEF-AE4 for single/multiple flexible conduit flashing
.6 Thaler MEF-AE1 for rigid conduit flashing
.7 Refer to mechanical and electrical drawings for locations of pipes and conduits penetrating roof.

.5 Roof Mastic: MBR flashing cement by Johns Manville.

## PART 3 - EXECUTION

### 3.1 PREPARATION

.1 Examine materials over which Work of this Section are applied and ensure that roof deck is free of snow, ice, loose or adhering materials which would impair this Work. Substrate shall be clean, dry and suitable for roofing application. Dry with torches if necessary.

.2 Coordinate with forces installing exterior grade plywood over steel deck at canopies.

### 3.2 WORKMANSHIP

.1 Employ experienced and qualified workmen and competent supervision to ensure satisfactory installation in accordance with specified requirements.

.2 Maintain roofing equipment in good working order.

.3 Do not overheat bitumen. Maximum temperature for rubberized asphalt is 243°C. Do not apply to the roof under 205°C. Once asphalt temperatures exceed 246°C., the material will be considered unsatisfactory and must be removed from the site.

.4 Construct roof in conformity to Class A roof assembly as approved by U.L.C.
.5 Keep an accurate thermometer suspended in the heating kettle while the work is in progress and provide a similar thermometer to test bitumen temperature at point of application.

.6 Locate bitumen kettles and tankers to avoid smoke discolouration of existing and adjacent buildings.

.7 Handle and store materials carefully to prevent damage. Keep manufacturer's labels and seals intact. Store bitumen containers in an upright position and store roofing rolls on end to prevent flattening. Protect materials from moisture at all times. When temperature is below 5°C, store roofing felts in a warm atmosphere for 48 hours before using.

.8 Commence roofing as soon as structure is ready. Do not apply roofing materials during inclement weather.

.9 All plies of roofing felt except when otherwise specified shall be "mopped solid" and squeezed into bitumen. Apply felts in straight lines, free from air pockets, wrinkles, fishmouths, open laps or tears.

.10 Do not leave installed insulation or roofing felts unprotected. Coat with bitumen and ensure that edges are sealed against penetration of moisture.

3.3 **TWO PLY MODIFIED BITUMINOUS FLASHINGS**

.1 Apply modified bituminous base sheet with hot applied rubberized adhesive in accordance with CRCA Requirements for a 2 ply modified bituminous flashing system. Terminate base sheet at highest possible points and at parapets extend and mop-in over top ply roof felt.

.2 Cap sheet flashing shall be mopped on.

.3 Cap sheet flashing shall be applied to extend down outside face of parapet, across top of parapet, down interior vertical surface and on to flat roof a distance of 150mm.

.4 Cap sheet shall be mopped on in accordance with recommendations of the membrane Manufacturer.

.5 Care must be taken to avoid asphalt seepage greater than 5mm. At seams. Ensure that membrane is properly bonded, without air pockets, wrinkles, fishmouths or tears.

.6 Cap sheet shall have side laps of 75mm. And end laps 150mm. Surface granules on end laps shall be embedded prior to installation of following sheet.

.7 To prevent possible voids at end/side laps, cut the corner piece off the selvage edge that will be covered by the next roll. The cut piece shall be the width of the lap (75mm) and extended along the selvage edge 150mm.

.8 After installation of the cap sheet, check all lap seams. Adhere and reseal all seams found to be poorly mopped and bonded.

.9 Face nail total flashing system to outside face of parapet wood blocking with galvanized roofing nails.

.10 At low roof/exterior wall interface where wall flashings extend down over mod. bit. flashings, lightly trowel a continuous 75mm width of cap sheet and lap and bond wall flashing onto mod bit. flashing. Refer to details as shown on Drawings.

.11 Strip-in flanges of roof accessories, 'stack jacks' and other flashing flanges with a single ply of base sheet embedded in continuous mopping of asphalt of the same type used for the roof membrane. Set flanges into a bed of plastic cement. Similarly, gravelstop flanges must be primed and secured at 300mm o.c.

3.4 **EXPANSION CONTROL**

.1 Provide expansion joints where indicated on drawings. Install expansion joint assemblies in conformance with Section 07 95 00 and manufacturer's instructions.

.2 Provide C/S flexible neoprene expansion joint bellows where indicated on drawings.

3.5 **ELASTIC FLASHINGS**

.1 At movement joints, mop in flexible flashing except where indicated otherwise.

.2 At vertical surfaces, fasten top of flashing as detailed.

.3 Carry elastic flashing down over cant and out 150mm onto membrane before top pour. Adhere to membrane. Seal all joints and edges. Cover lower, flat part of elastic flashing with top pours of bitumen and aggregate.

.4 Do not stretch elastic flashing during installation. Provide a minimum overlap of 100mm when forming laps and flashing corners.

3.6 **ROOF VENT FLASHINGS AND ACCESSORIES**

.1 Coordinate with mechanical and electrical trades for specific locations of mechanical and electrical flashings.

.2 Install roof accessories, stack jacks , split flashings, and other flashing flanges in accordance with manufacturer's recommendations, roofing manufacturer's recommendations and project drawings.

.3 Torch membrane until bitumen is fluid and set flange into fluid.

.4 Apply base flashing into kettle modified asphalt at the rate of 25 lbs./square (1.22 kg/m²) ensuring a full bond. Extend onto roof a minimum of 150mm.

.5 Apply cap sheet flashing into kettle modified asphalt at the rate of 1.22 kg/m² (25 lbs./100 sq.ft.) ensuring a full bond. Extend a minimum of 230mm onto roof surface. Properly secure flashing to their support, without sags, blisters, fishmouths or wrinkles with termination and fasteners as indicated on drawings.

.6 Install flashings in accordance with guide specifications listed in the manufacturer's installation manual and project drawings.

.7 Do not melt EPDM Base Seal and soldered joints.

.8 Install roofing accessories in accordance with manufacturer's printed instructions and as indicated on Drawings.

.9 Mop in and seal flanges of items penetrating membrane with a base and cap ply of modified bitumen membrane. Install clamping ring on drains.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 RELATED WORK SPECIFIED ELSEWHERE

| | | |
|---|---|---|
| .1 | Flashing Inserts | Section 03 30 00 |
| .2 | Through-Wall Flashing | Section 04 21 00 |
| .3 | Modified Bituminous Membrane Roofing | Section 07 52 00 |
| .4 | Joint Sealants | Section 07 92 00 |

### 1.2 REFERENCES

.1 ASTM International

| | | |
|---|---|---|
| .1 | ASTM A653M | Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process |
| .2 | ASTM A924M | Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process |
| .3 | ASTM D41 | Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing |
| .4 | ASTM D2092 | Standard Guide for Preparation of Zinc-Coated (Galvanized) Steel Surfaces for Painting |

.2 Canadian Sheet Steel Building Institute (CSSBI)

| | | |
|---|---|---|
| .1 | CSSBI S8 | Quality and Performance Specification for Prefinished Sheet Steel Used for Building Products (Canadian Sheet Steel Building Institute) |
| .2 | CSSBI 20M | Standard for Sheet Steel Cladding for Architectural, Industrial and Commercial Building Applications |
| .3 | CSSBI SSF No. 6 | Metallic Coated Sheet Steel Products for Structural Building Products |

.3 Sheet Metal & Air Conditioning Contractors's National Association

.1 SMACNA Architectural Sheet Metal Manual, 7th Edition

### 1.3 QUALITY ASSURANCE

.1 Work of this Section shall be executed by same trade specialists installing membrane roofing, in accordance with practices and details of Sheet Metal and Air Conditioning Contractors National Association (SMACNA) Architectural Sheet Metal Manual.

### 1.4 SUBMITTALS

.1 Submit typical 300 mm long sample of flashing indicating design method of locking and method of anchoring and corner section fabricated from materials specified.

### 1.5 WARRANTY

.1 Contractor hereby Warrants that Work performed under this Section shall remain free against leakage, joint spalling and similar defects in accordance with General Conditions, but for a period of **five (5) years**.

1.6 **INSPECTION AND TESTING**

.1 Inspection and testing of this Work is included in inspection and testing of roofing and roof insulation.

## PART 2 - PRODUCTS

2.1 **MATERIALS**

.1 Metal Flashing: Minimum 26 ga. prefinished sheet steel supplied in flat sheet stock
- .1 PMF: Baycoat Perspectra Series or Valspar WeatherX, 2-coat system, colour to match existing .
  - .1 Locations: at areas on roof not visible on building faces.

.2 Nails: Chromium/Nickel, No.12 x 25mm flat headed, annular threaded stainless steel.

.3 Cleats, Starter Strips and Back-up Plates:
- .1 Same metal and thickness as metal flashing;
- .2 cleats minimum 38mm wide and interlocked with metal flashing; starter strips, continuous.
- .3 Back-up plates minimum 300mm wide where adjacent lengths of cap flashing meet, fabricated of same material thickness and finish as cap flashing.

.4 Screws, Bolts and Expansion Shields:
- .1 Non-ferrous metal compatible with adjacent surfaces.
- .2 Exposed fastenings shall be same materials as metal surfaces through which they penetrate.
- .3 Use cadmium plated screws with round heads suitable for soldering for galvanized Work.

.5 Solder: ASTM B32-70, 50% block tin and 50% pig lead.

.6 Flux: Commercial hydrochloric acid cut with zinc, or 10%-20% solution of orthophosphoric acid in water, for use with galvanized Work.

.7 Sealants: As specified in Section 07 92 00.

.8 Asphaltic Primer: CGSB 37-GP-9M and ASTM D41; Henry/Bakor "Primer 910-01", quick drying asphaltic base paint.

## PART 3 - EXECUTION

3.1 **FABRICATION**

.1 Where possible, shop fabricate flashing components in accordance with applicable requirements of SMACNA Architectural Sheet Metal Manual.

.2 Carry out fabrication in clean shops, located away from areas where carbon steel is torch cut, ground, or cut with abrasive wheels to ensure that carbon steel dust will not be embedded in

prefinished surfaces. Clean tools and dies which have been used on carbon steel prior to fabrication to prevent contamination of surface with carbon steel dust.

.3 Form sheet metal on bending brake. Perform shaping, trimming and hand seaming on bench, where practicable, using proper sheet metal working tools.

.4 Form sections square, true and accurate to size. Flashings shall be free from distortion, waves, twists, buckles or other defects detrimental to appearance and performance.

.5 Make allowances for thermal movement when forming, installing, interlocking and soldering sheet metal Work to avoid buckling, fullness of metal straining of joints or seams. Maximum length of flashing pieces; 2400mm. Double back exposed edges at least 12mm for appearance and stiffness.

.6 Fabricate flashings, copings, closures, plastic boxes, pipe sleeves and flashings for roof mounted equipment to details shown, unless otherwise indicated.

.7 Wipe and wash clean, soldered joints immediately after joint is soldered to remove acid.

.8 Where soldered joints are absolutely necessary and where approved for use in prepainted metal, clean paint off both surfaces before soldering for minimum area necessary.

3.2 **INSTALLATION**

.1 Carry out Work in accordance with industry standard sheet metal practice with joints lapped, locked, cleated with "S" cleats and caulked or soldered as required. Hem exposed edges 12mm. Type of joints used shall be adequate for various conditions, subject to approval.

.2 Fabricate exposed fastening, where used, in such a manner as to prevent water penetration at point of fastening.

.3 Imperfections in sheet metal work such as holes, dents, creases, or oil-canning is cause for rejection.

.4 Repair damaged sheet metal work, wash entire installation down, and leave in neat condition.

.5 Provide all flashings required for proper execution and completion of the Work in acceptable manner including metal flashing around mechanical and other equipment occurring on roof.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 RELATED WORK

| | | |
|---|---|---|
| .1 | Sheet Metal Flashing and Trim | Section 07 62 00 |
| .2 | Firestopping and Smoke Seal | Section 07 84 00 |
| .3 | Resilient Flooring | Section 09 65 00 |

### 1.2 REFERENCE STANDARDS

.1 ASTM International:

| | | |
|---|---|---|
| .1 | ASTM C 510 | Standard Test Method for Staining and Color Change of Single- or Multicomponent Joint Sealants |
| .2 | ASTM C 719 | Standard Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cyclic Movement (Hockman Cycle) |
| .3 | ASTM C 794 | Standard Test Method for Adhesion-in-Peel of Elastomeric Joint Sealants |
| .4 | ASTM C 834 | Standard Specification for Latex Sealants |
| .5 | ASTM C920 | Standard Specification for Elastomeric Joint Sealants |
| .6 | ASTM C 1087 | Standard Test Method for Determining Compatibility of Liquid- Applied Sealants with Accessories Used in Structural Glazing Systems |
| .7 | ASTM C 1193 | Standard Guide for Use of Joint Sealants |
| .8 | ASTM C 1247 | Standard Test Method for Durability of Sealants Exposed to Continuous Immersion in Liquids |
| .9 | ASTM C 1248 | Standard Test Method for Staining of Porous Substrate by Joint Sealants |
| .10 | ASTM C 1311 | Standard Specification for Solvent Release Sealants |
| .11 | ASTM D 2203 | Standard Test Method for Staining from Sealants |

### 1.3 APPROVED MANUFACTURERS

.1 The products of the following manufacturers are approved for use subject to meeting the specifications for the particular type of sealants listed below. However, this is not an approval to substitute another type of sealant for those specified unless the material manufacturer requests change in his product in writing to the Consultant.

- .1 Canadian General Electric Company Ltd.
- .2 Dow Corning Canada Inc.
- .3 Tremco

.2 Material manufacturers must be willing to review Shop Drawings and drawing details, visit the site to review sealant installation and provide written reports to the Consultant.

### 1.4 INSTALLER QUALIFICATIONS

.1 Sealants and caulking shall be installed by a specialized Subcontractor, having skilled mechanics thoroughly trained and competent in all aspects of caulking work, with minimum 5 years documented experience.

1.5 **SUBMITTALS**

.1 Submit samples of each sealant, in conformance with Section 01 33 23.

.2 Provide colour cards for Consultants selection.

.3 Submit written adhesion and compatibility approval from the sealant manufacturer for all materials to be sealed.

1.6 **WARRANTY**

.1 Extend Contractor's warranty to **five (5) years**, in writing. Warranty shall commence on the date of Substantial Performance.

.2 Defective work shall include, but not be restricted to, joint leakage, cracking, crumbling, melting, running, loss of adhesion, loss of cohesion, or staining of adjacent surfaces

.3 Provide manufacturer's project-specific 20 year non-staining warranty and 10 year weatherseal warranty for "Type A" sealant listed below.

**PART 2 - PRODUCTS**

2.1 **MATERIALS**

.1 Sealant Type A: For exterior locations. Non-Staining, primer less, silicone weather-proofing sealant:

.1 SilPruf SCS9000 NB, manufactured by Canadian General Electric Company Limited,
.2 Dow Corning 756 SMS, manufactured by Dow Corning Canada Inc., or
.3 Spectrem 3, manufactured by Tremco Ltd., and
.4 conforming to the product properties published.
.5 to ASTM C920 Type S, Grade NS, Class 50, Use NT, M, G, A, and O

.2 Sealant Type B: For interior locations. Non-staining, primer less, silicone hybrid sealant:

.1 SCS7000, manufactured by Canadian General Electric Company Limited.
.2 Dow Corning 756 SMS, manufactured by Dow Corning Canada Inc., or
.3 Spectrem 3, manufactured by Tremco Ltd.
.4 to ASTM C920 Type S, Grade NS, Class 50, Use M, G, A, and O

.3 Sealant Type C: For interior locations where conditions of high humidity exist such as washrooms. Mildew resistant, one component silicone conforming to CGSB 19-GP-22M and ASTM C920:

.1 CGE SCS1700 Sanitary Sealant,
.2 Dow Corning 786, or
.3 Tremco Tremsil 200 White

.4 Sealant Type D: For interior locations. Paintable, non-staining, primer less, silicone hybrid sealant:

.1 SCS7000, manufactured by Canadian General Electric Company Limited.

.5 Sealant Type E:

.1 one-part, moisture cure, medium modulus sealant; Contractors Weatherproofing Sealant (CWS); to ASTM C 920 Type S, Grade NS, Class 50, Use NT, M, A, O (granite)

.2 one-part, moisture-cure, low-modulus silicone sealant; Contractors Concrete Sealant by Dow Corning; to ASTM C 920 Type S, Grade NS, Class 50, Use T, NT, M, G, A, O

.6 Colours of sealants and caulking when exposed in the finished work to later selection by the Consultant. Allow different colours for different situations and materials. Allow for custom colours for exterior sealants.

.7 Primers for sealing: As manufactured or recommended by the manufacturer of the sealing materials for the specific applications.

.8 Joint backing material:

.1 circular foam strips, of approved manufacture, compatible with sealant and 50% greater width than joint width;

.2 Vertical Surfaces: extruded polyolefin foam, Sof Rod by Tremco Ltd.

.3 Horizontal Surfaces: closed cell polyethylene foam, Standard Backer Rod by Tremco.

.9 Bond Breaker: pressure sensitive plastic tape backing material, which will not bond to sealant; 3M #226 or #481, or Valley Industries #40.

.10 Cleaning material for surfaces to receive sealant to be as recommended by the manufacturer of the sealant.

## PART 3 - EXECUTION

### 3.1 LOCATIONS

.1 Seal all exterior junctions and joints wherever required to close gap and wherever sealant is essential to maintain the continuity of air barrier, water barrier, or non-rated smoke separation of wall with Sealant Type A. Areas to be caulked include:

.1 Concrete to metal, masonry, concrete and precast concrete.

.2 Masonry to metal, concrete, precast concrete, and masonry.

.3 Metal to metal, masonry, concrete, and precast concrete.

.4 Around pipes and conduit through foundation walls.

.5 Between hollow metal frames and screens and adjacent materials.

.6 Between metal siding and metal panels and adjacent materials.

.7 Between window, louvre, and skylight frames and sills and adjacent materials.

.8 At all control and expansion joints.

.2 Seal all interior junctions and joints wherever required to close gap and wherever sealant is essential to maintain the continuity of air barrier, water barrier, or non-rated smoke separation of wall with Sealant Type B. Areas to be caulked include:

.1 Concrete to metal, masonry, concrete and precast concrete.

.2 Masonry to metal, concrete, precast concrete, and masonry.

.3 Metal to metal, masonry, concrete, and precast concrete.

.4 Around pipes and conduit through walls.

.5 Between hollow metal frames and screens and adjacent materials.

.6 Between window, louvre, and skylight frames and sills and adjacent materials.

.7 At all joints between millwork and masonry, to provide neat junction.

.8 At junction between all counters and/or splashbacks and adjacent substrate with neat 3mm bead.

.9 At all control and expansion joints.

.3 Seal with Sealant Type C at the following locations:

.1 Around access panels in ceramic tile faced walls with a neat 3mm bead.

.2 Around perimeter of piping penetration at tile work.

.3 At junctions between all counter tops and/or splashbacks and adjacent substrate in washrooms, with neat 3mm bead.

.4 At junctions of lavatories, toilets, and other plumbing fixtures and adjacent substrate.

.4 Seal with Sealant Type D at all interior non-moving joints to be painted.

.5 Seal at all other vertical and horizontal joint locations with Sealant Type E.

.6 Refer to Section 07 84 00, Firestopping and Smoke Seal, for location of fire stopping and fire resistant caulking.

.7 Refer to Section 09 29 00, Gypsum Board, for acoustic sealant work.

3.2 **SUPERVISION**

.1 Unless specified otherwise herein comply with the recommendations and directions of the manufacturer whose materials are being used on the work.

.2 Arrange for the sealant manufacturer's technical representatives to visit the site prior to the commencement of the sealing to meet with the Contractor and the Consultant.

.3 Sealant manufacturer to visit site periodically and to provide written reports to Consultant ensuring sealant is in accordance with good trade practice, the manufacturer's recommendations and the intent of this Specification.

3.3 **PREPARATION**

.1 Install sealants only when surfaces and ambient temperatures are suitable for the material used, as per manufacturer’s recommendations.

.2 Clean all joints and spaces to be sealed.

.3 Ensure that surfaces are structurally sound, free from grease, chalk or other contaminants which may adversely affect the adhesion of the sealing materials. Use dry oil free clean compressed air stream if necessary to clean out the joint.

.4 Clean surfaces with a solvent or cleaner recommended by the manufacturer of the sealant materials.

.5 Remove chalk lines completely. Do not place clear sealant over coloured chalk lines.

.6 Test materials for indications of staining or poor adhesion before any sealing is commenced.

.7 Submit colour chart to Consultant and obtain his written instructions for colours and locations of colours.

3.4 **PRIMING**

.1 If recommended by the manufacturer of the sealing materials, prime joints to prevent staining, or to assist the bond, or to stabilize porous surfaces.

.2 Apply primer with a brush which will permit the priming of all joint surfaces.

3.5 **MASKING**

.1 Where necessary to prevent contamination of adjacent surfaces, mask the areas adjacent to the joints with masking tape.

3.6 **INSTALLATION**

.1 Install joint backing materials at all locations as detailed or where required by sealant manufacturer's printed directions.

.2 Install a bondbreaker tape or packing over asphalt impregnated fibre board as recommended by sealant manufacturer.

.3 Ensure that the correct sealant depth is maintained.

.4 Finished joints shall be free of wrinkles, sags, air pockets, ridges and embedded impurities.

.5 Tool all sealant surfaces to produce a smooth surface.

.6 Remove droppings and excess sealant as work progresses and before material sets.

.7 Sealing materials shall be gun grade or tool grade consistency to suit the joint conditions.

.8 Commence sealing only after all adjacent surfaces have been painted under Painting Section.

3.7 **CLEANING**

.1 Clean adjacent surfaces immediately and leave work neat and clean. Remove excess sealant and droppings using recommended cleaners as work progresses. Remove masking after joint tooling.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 RELATED WORK

| | | |
|---|---|---|
| .1 | Concrete Masonry Units | Section 04 22 00 |
| .2 | Wood Doors | Section 08 14 00 |
| .3 | Joint Sealants | Section 07 92 00 |
| .4 | Door Hardware | Section 08 71 00 |
| .5 | Glazing, fire glass | Section 08 81 00 |
| .6 | Gypsum Board | Section 09 29 00 |
| .7 | Painting | Section 09 90 00 |
| .8 | Electrical | Division 16 |

### 1.2 WORK INCLUDED

.1 Supply and install all hollow metal products including doors, frames, transom frames, screens, sidelight and window assemblies with provision for glazed, panelled or louvred openings, fire labelled and non-labelled, as scheduled or shown on the Drawings.

.2 Work shall including the following:

.1 Door cutouts, complete with reinforcing, stops and closers required for glazing.

.2 Reinforcing for Finishing Hardware.

.3 Supply all necessary fastening and anchoring devices for above items.

.4 Steel closure pieces at metal panels, steel columns, horizontal members, and hollow metal frames and screens. Refer to Drawings.

.5 Metal panels in hollow metal frames.

.6 Hot-dip galvanization of all exterior steel doors, frames and screens.

.7 Fire rated and labelled doors, frames, & screens where noted on schedule.

.8 Supply and install HSS and channel reinforcing members where shown at screens and door frames/sidelights.

.9 Supply and installation of transfer grilles and door louvres, where indicated on Door and Frame Schedule; fire labelled where door rating is indicated.

.10 Supply and install door silencers on metal frames.

.11 Supply and install horizontal sliding glass window frame and hardware.

1.3 **REFERENCES**

.1 CAN4-S104 Fire Tests of Door Assemblies
.2 CAN4-S105 Standard Specification for Fire Door Frames Meeting the Performance Required by CAN4-S104
.3 CAN4-S106 Standard Method for Fire Tests of Window and Glass Block Assemblies
.4 Canadian Steel Door Manufacturers Association (CSDMA)
  .1 Recommended Specifications for Commercial Steel Doors and Frames
  .2 Recommended Dimensional Standards for Commercial Steel Doors and Frames
  .3 Recommended Specifications for Sound Retardant Steel Doors and Frames
  .4 Canadian Fire Labelling Guide for Commercial Steel Door and Frame Products
  .5 Guide Specification for Installation and Storage of Hollow Metal Doors and Frames
.5 CGSB 82.5 Insulated Steel Doors
.6 CSA A101 Mineral Fiber Thermal Insulation for Buildings
.7 CSA W59 Welded Steel Construction (Metal Arc Welding)
.8 ASTM A653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
.9 ANSI A250.4 Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors Frames and Frame Anchors
.10 ANSI A115.IG Installation Guide for Doors and Hardware
.11 ANSI A250.11 Recommended Erection Instructions for Steel Frames

1.4 **PERFORMANCE**

.1 Doors and frames covered by this specification shall be certified as meeting Level "A" acceptance criteria when tested in strict conformance with ANSI-A250.4-2011. Swing Test duration shall be 1,000,000 cycles. For door twist tests maximum deflection is not to exceed 32mm (1¼") when loaded to 136kg (300 lbs), and permanent deflection is not to exceed 3.2mm (1/8"). Tests shall be conducted by an independent nationally recognized accredited laboratory.

.2 Fire labelled product shall be provided for those openings requiring fire protection and temperature rise ratings, as determined and scheduled by the Consultant. Doors, frames, transom frames and sidelight assemblies shall be tested in strict accordance with CAN4-S104. Product shall be listed by Underwriters Laboratories of Canada under an active Factory Inspection Program and shall be constructed as detailed in Follow-Up Service Procedures issued to the manufacturer.

.3 Should any door or frame specified by the Consultant to be fire rated, not qualify for labelling due to design, hardware, glazing or any other reason, advise the Consultant before manufacturing commences.

.4 Core materials for exterior doors shall attain a thermal resistance rating RSI 1.06 (R6.0) when tested in accordance with ASTM C518.

.5 Product quality shall meet standards set by the Canadian Steel Door Manufacturers Association.

1.5 **QUALITY ASSURANCE**

.1 Supply all steel door and frame product from one manufacturer member company of the CSDMA.

.2 Manufacturer must be capable of labelling the fire rated doors, frames, and screens, glazed with specified fire glass. Refer to Section 08 81 00 for fire glass specifications. No Georgian Wire Glass will be permitted on the job.

.3 CSDMA Specification 08 11 13 "Commercial Steel Doors and Frames" is the minimum fabrication standard for this section, as if printed in its entirety herein, except where specified otherwise.

.4 Handle and install product in strict compliance with CSDMA 08 11 13, DHI A115.IG and NFPA 60.

.5 A cash allowance is included in the tender price to cover cost of an independent inspection company, to be selected by Consultant. Allowance is the responsibility of the Contractor and any ensuing deficiency correction costs are the responsibility of the supplier and/or the installer(s), as determined by the inspection report. The Owner reserves the right to have inspection include manufacturing facilities, and work in progress for this project, prior to award of contract or Substantial Performance of the contract.

1.6 **SUBMITTALS**

.1 Submit confirmation that the manufacturer can label all fire rated doors, frames, and screens, glazed with the fire rated glass to be used on the project, for the fire separation required.

.2 Prepare and submit shop Drawings in accordance with Section 01 33 23, and show the following:

.1 Door and frame schedules, identifying each unit, with door numbers referencing the numbering in the contract documents.

.2 Provide columns for Stock Code Numbers for both doors and frames.

.3 Typical and special details; including mortises, reinforcements, anchorages, locations of exposed fasteners, openings (glazed, panelled or louvered) and arrangement of hardware.

.4 Materials and finishes; including steel, core, material thickness.

.5 Hardware preparation.

.6 Frame anchorage details.

.7 Submit manufacturer's standard catalogue data for specified products demonstrating compliance with referenced standards.

.8 Other pertinent information.

.3 Submit information on standard shop drawing sheets as approved by the Canadian Steel Door and Frame Manufacturers Association.

.4 Shop drawings for hollow metal screens over $8m^2$ in size, and for all screens which are required by code to be designed as guards at variations in floor level, must be sealed by a professional engineer, registered in the Province of Ontario.

.5 Submit manufacturer's printed installation instructions.

.6 Operation and Maintenance Data: Include methods for maintaining installed products and precautions against cleaning materials and methods detrimental to finishes and performance.

1.7 **PRODUCT HANDLING**

.1 Matchmark doors, panels, frames and windows with Stock Code Numbers as shown on the Door Schedule. If Stock Code Numbers are not shown on the Schedule, matchmark with Door Numbers.

.2 Deliver, store and handle components so as to prevent damage, distortion and corrosion.

.3 Store Steel Frames under cover, raised on wood skids at least 100mm above grade, and as required to prevent damage and rusting. Store assembled frames in an upright position. Stack frames to prevent twisting; maximum 5 units per stack. Provide minimum 6mm airspace between frames to permit air circulation. Covers must be vented so as to avoid a build-up of humidity within.

.4 Doors to be delivered to site immediately prior to installation. Store doors protected at corners to prevent damage or marring of finish. Store in upright position, in enclosed, dry space, in a manner to prevent rust and damage. Use vented covers.

1.8 **TESTING**

.1 Three doors will be selected at random by the Consultant and shall be subjected to destructive testing by an Inspection Company appointed by the Consultant, to verify conformance to the specifications. Replace the doors at no additional cost to the Contract.

1.9 **WARRANTY**

.1 Provide an extended warranty of three (3) years from date of Substantial Performance against defects of workmanship including failure of welded seams or of reinforced hinge anchorage plates. Work showing defects during this period shall be repaired or replaced without cost to the Owner.

**PART 2 - MATERIALS**

2.1 **MATERIALS**

.1 General: All materials shall be new and suitable for their various purposes and shall be free from flaws and imperfections.

.2 All doors, frames, and screens shall be from one manufacturer. Only the following manufacturers will be accepted:

.1 Manufacturers:
- .1 Fleming Baron Door Products (Assa Abloy)
- .2 Daybar Industries Ltd.
- .3 All Steel Doors
- .4 Gensteel Doors
- .5 Trillium Steel Doors
- .6 Vision Hollow Metal

.2 Manufacturers must be able to provide and label the fire rated doors, frames, and screens required for this project, using the fire glass specified. If the manufacturer carried in the tender is not capable of providing the fire labelled products, the contractor will be required to use one of the other listed manufacturers for the work, at no additional cost to the Owner.

.3 Sheet Steel:

.1 General: cold rolled, carbon steel, stretcher levelled. Steel to have hardness of Rockwell 'B' maximum 65 (ASTM E103) suitable for forming and bending without metal or coating fracture.

.2 ASTM A65 3/A653M commercial grade tension levelled hot-dipped galvannealed steel sheet, coating designation Z275

.3 Doors, over $3m^2$: commercial quality zinc coating, comply with ASTM A1008/A1008M.

.4 Steel Thicknesses:

.1 Doors:
- .1 1.6mm (16 ga) for all doors

.2 Panels: 1.3mm (18 ga)

.3 Frames: 1.6mm (16 ga)

.4 Hinge Reinforcement: 3.5mm (10 ga)

.5 Door Materials:

.1 Exterior, High Use and Oversize Doors:
- .1 Includes all exterior doors and vestibule doors, stairwell doors, Gymnasium doors, and all other high use doors, and
- .2 all doors over $3m^2$ and over 1200mm wide or over 3000mm in length
- .3 Semi-rigid glass fibre insulation fastened between continuous interlocking steel ribs to prevent sagging or movement.
- .4 Doors to be Fleming H-Series, 16 gauge, with continuous welded edge seams.

.2 Other interior doors and panels up to $3m^2$ and maximum width of 1200mm or maximum length of 3000mm:
.1 Doors to be Fleming D-Series, 16 gauge, or equivalent.
.2 Interior Doors to be Honeycomb Core.

.6 Fire rated doors: in accordance with fire test requirements.

.1 locate U.L.C. label on inside of hinge jamb on frame.

.2 locate U.L.C. label on the top hinged edge of door midway between top hinge and top of door. Doors to be as noted above.

.7 Door Reinforcement: Reinforce all steel doors with 20 ga. vertical interlocking weld steel stiffeners at 150mm o.c., spot welded to face sheets.

.8 Frame reinforcement:

.1 Reinforce frames for high frequency hinge preparation.

.2 Stiffen all mullions and hinge jambs with continuous 3.5mm channel where continuous hinges are required.

.3 Reinforce and provide cut outs and boxes for security devices.

.9 Exterior Top Caps: galvanized steel caps, flush with top of door.

.10 All exterior doors and frames to be hot-dipped galvanized after fabrication, to Z275 (G90) finish coating.

.11 Galvanizing Touch-up Coating: "ZRC 221 Cold Galvanizing Compound" by ZRC Worldwide, low VOC coating, or equivalent approved by the Consultant.

.12 Metal Filler: Two component epoxy type.

.13 Primer: Rust inhibitive primer

.14 Glass Stop Screws: Oval head, cadium plated, self-tapping steel screws. Other mechanical locking methods may be used but shall be detailed on Shop Drawings for review.

.15 Door Silencers: Rubber - Ives SR64 or approved equal.

.16 Frame Anchors: Provide standard galvanized steel anchors for interior doors and reinforced galvanized steel anchors for exterior frames. Refer to D013.

.17 Sliding Glass Window: Knapee and Vogt "Roll-Ezy" track for top and bottom of glass with ball bearing track, rubber bumpers, and finish finger pulls.

2.2 **FABRICATION**

.1 General

.1 Dissimilar metals in contact, or metals which will be in contact with concrete or masonry when installed, shall be insulated one from another by methods and materials required for such results, as approved by the Consultant.

.2 Components shall be the types and sizes shown on the Drawings.

.3 Reinforce components, where required, for the installation of Finishing Hardware. Drill and tap to suit templates.

.4 Prepare doors and frames for the installation of the security system. Confirm requirements with Consultant.

.5 Ensure adequacy of anchoring devices.

.6 No patching, plugging, skimming or other such means of overcoming defects, discrepancies or errors shall be resorted to without written permission of the Consultant.

.7 Fabricate components from clean steel, free of rust and scale, which has been thoroughly degreased.

.8 The dimensions shown on the Drawings are the full rebate size of the frame.

.9 In addition to specified requirements for hollow metal doors and frames, fire doors and frames shall comply with the Underwriters Laboratories requirements for the specified rating and be provided with the appropriate labels.

.10 All seams in exterior doors, stairwell doors, and all doors over $3m^2$ and over 1200mm wide or over 3000mm in length, and seams in all frames must be continuously welded. No spot welding will be permitted. All welds must be ground flush. No visible seams will be accepted.

.11 All exterior steel doors, frames and screens to be hot-dipped galvanized after fabrication.

.12 All areas where galvanizing has been damaged shall immediately be cleaned and touched up with low VOC zinc-rich coating, "ZRC 221 Cold Galvanizing Compound" by ZRC Worldwide.

.2 Edge Clearances

.1 Unless otherwise specified, allow edge clearances in accordance with Canadian Manufacturing Specifications for Steel Door and Frame Manufacturers Association.

.2 Where hardware items are to be attached to, or mortised into, bottom edges of doors, provide proper clearance between door and floor or threshold to accommodate such hardware.

.3 Hardware Preparation

.1 Templated hardware: prepare work in accordance with templates supplied in Section 08 71 00. Prepare doors for mortice locksets according to Hardware Schedule.

.2 Reinforce doors and frames for concealed, mortised and surface mounted hardware in accordance to "Thickness of Steel for Component Parts" in the "Canadian Manufacturing Standards for Steel Doors and Frames", published by the Canadian Steel Door and Frame Manufacturers' Association.

.3 Prepare doors and frames for security system where noted.

.4 At oversized door locations, provide minimum 4 butt hinge preparations.

.5 Prepare all exterior doors and vestibule doors and frames for four hinges.

.4 Hollow Metal Doors and Panels

.1 Doors and panels shall be of seamless, continuously welded construction with no visible seams or joints on faces. Doors to be 44.4mm minimum thickness.

.2 Secure edge seams with suitable continuously welded seams to the approval of the Consultant.

.3 Interlocking seams for doors shall be fully seam welded, for full length of door. All welding to be ground smooth.

.4 Core construction:

.1 Exterior doors to be filled with glass fibre insulation between steel reinforcing. All Type H doors to be steel stiffened as specified herein.

.2 All interior doors shall have steel reinforcing.

.3 Interior Doors for Classrooms, Closets and Storage Rooms to be Honeycomb Core
.1 Honeycomb: Structural small cell (25.4 mm max) Kraft paper "Honeycomb"; weight: 36.3kg per ream minimum; density: 16.5kg/$m^3$ minimum.

.4 Temperature Rise Rated (TRR): Solid slab core of non-combustible, inorganic composite to limit temperature rise on the "unexposed" side of door to 250°C at 30 or 60 minutes, as required by governing building code requirements and determined and scheduled by the Consultant.

.5 Welds shall be ground, filled, and dressed smooth to provide an invisible joint and smooth flush surface.

.6 Fully reinforce doors as required for specified hardware. All exterior, stairwell, and washroom doors and all doors noted as "high frequency" shall be reinforced with S.W. Fleming high frequency angle top hinge reinforcement, welded to door skin.

.7 Close top and bottom edges of doors with a continuous, recessed, minimum 1.5mm thick steel channel, extending full width of door and welded to both faces. At exterior doors, provide an additional flush closing channel at top edge and, where required for attachment of weather stripping, a flush closure at bottom edge. Provide similar closure channel at all stair doors and doors to all Change Rooms.

.8 Surround openings in doors with minimum 1.5mm thick steel edge channels, welded to both face sheets.

.9 Vertical edge profile for single acting swing doors: bevelled 3mm in 50mm.

.10 Equip glazed doors with minimum 0.9mm steel glazing stops, mitred and welded at corners. Where least dimension of stop is less than 12mm, make stop from solid square bar. Glazing stops at outside of exterior doors and at secure side of interior doors shall be rendered non-removable by welding to door. Secure removable stops with screws. Glazing stops may be mechanically locked in place, providing details have been reviewed on Shop Drawings.

.11 Fabricate exterior panels with a full width steel drip on the outer, lower edge.

.12 Doors for installation in channel frames shall be double-depth mortised to accommodate both butt flanges.

.13 Construct fire doors to meet fire test requirements and provide U.L.C. labels.

.14 Sound Control Door Assemblies: Provide assemblies that have been tested in accordance with ASTM E90, certified to a minimum rating of STC 46, where indicated in the Architect's door schedule. Assembly includes manufacturer's proprietary door and frame construction, and acoustical gasketing system.

.5 Steel Frames

.1 Frames shall be of sheet steel, formed profiles shown on the Drawings. Fleming D Series for interior, Fleming H Series for exterior.

.2 Fabricate frames in sections as large as practicable to minimize field jointing. Internally reinforce all mullions and hinge jambs with 1.3mm channel.

.3 Steel thickness: 1.6mm (16 ga.) galvanized steel.

.4 Glazing stops shall be as specified for doors above.

.5 Sidelight framing shall be of same metal and thickness as adjacent door frame.

.6 Assemble components with accurately cut joints. Mitre outside corner joints of frames. Continuously weld joints on inside of profile; grind welds flush and sand to smooth uniform surface. Provide semi-rigid insulation to exterior frames.

.7 Tack weld two (2) removable 1.2mm steel spreader channels to inside faces of door frames at base, for protection during shipping.

.8 Provide adjustable base clips at bottom of each door jamb for anchorage to floor.

.9 Provide button type rubber silencers; three per strike jamb of single doors: two per head member of double door frames.

.10 Prepare door frames for ANSI strike, where doors to be fitted with latchsets or lockets.

.11 Provide removable mullions where noted. Reinforce removable mullions with 3.5mm channel to prevent forcing of latching hardware.

.12 Provide masonry anchors of 1.5mm galvanized corrugated tee anchors or 3mm diameter galvanized wire anchors - supplied loose, at rate of 3 per jamb up to 2.2m high; one additional per jamb for each 0.6m over 2.2m high. Frames for observation windows shall be provided with 2 anchors per jamb.

.13 Provide two 38mm by 38mm by 4.8mm thick steel stiffening angles in the head member of frames for two or more doors totalling over 1980mm, wide. Provide necessary vertical stiffeners where required and carry to structure above. Provide stiffener angles in all exterior door jamb with sidelights and in all centre mullions between doors.

.14 Mounting bars for sidelights shall be as detailed on the Drawings and shall be completely filled with glass fibre insulation.

## PART 3 - EXECUTION

### 3.1 GENERAL

.1 Store doors and frames as specified under item 1.7, Product Handling, above.

.2 When installing frames during cold weather, installer to coat inside of frames with a corrosion inhibiting bituminous product, prior to installation, to protect against cold weather additives in masonry grout.

.3 Silencers, gaskets, etc., are to be installed in holes in frames prior to installation of frames; so to avoid filling these holes with grout during installation.

.4 Keep steel surfaces free of grout, tar, other bonding materials, and sealers; clean surfaces immediately following installation.

3.2 **INSTALLATION**

.1 Frame Installation

.1 Remove all steel spreaders, which are provided to avoid damage during shipping. Provide wood spreaders at base and midpoint of frames. Wood spreaders to be min. 38 x 89mm lumber, notched to clear frame stops; width to be equal to opening between jambs at header level. Wood spreaders to remain in place until frames are set permanently in walls.

.2 Set frames plumb, square, aligned, without twist and at correct elevation. Maximum allowable limits of distortion shall be as follows:

.1 Plumbness: Not more than 1.6 mm out of plumb, measured using a line from the intersection of vertical members and the head to the floor.

.2 Squareness: Not more than 1.6 mm difference between diagonal measurements between corners.

.3 Alignment: Not more than 1.6 mm, measured on jambs, through a horizontal line parallel to the plane of the wall.

.4 Twist: Not more than 1.6 mm, measured at face corners of jambs, on parallel lines perpendicular to the plane of the wall.

.3 At masonry walls, build in frames using the corrugated or wire masonry anchors. Brace frames solidly in position while being built in, with wood spreaders as noted above. Provide vertical support at centre of head for openings exceeding 1200 mm in width.

.4 After installation, fill countersunk screw heads flush with frame and sand smooth ready for painting. Fill exterior frames with glass fibre batt insulation. Cooperate with masonry trade to fill interior frames with mortar.

.5 Where large screens are assembled on site, they must be joined by continuously welded seams, ground smooth. Provide formed covers for structural columns built into screens.

.2 Door Installation

.1 Install hollow metal doors plumb and true.

.2 Co-ordinate installation of hardware.

.3 Adjust operable parts to ensure proper operation. Lubricate using a suitable lubricant compatible with door and frame coatings.

.4 Install hollow metal panels with concealed fastenings.

3.3 **TOUCH UP**

.1 Remove rust, clean and touch up any damaged galvanizing with "ZRC 221" coating.

.2 Remove rust, clean and touch up any damaged paint with approved rust inhibitive primer.

## 3.4 CLEANING AND PROTECTION

.1 Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged products. Clean installed products in accordance with manufacturer's instructions before Owner's acceptance.

.2 Remove construction debris associated with this work from project site, and dispose of in accordance with applicable laws.

.3 Protect installed products and finished surfaces from damage during construction.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 SECTION INCLUDES

.1 Ultra Heavy Duty Flush Wood Interior Doors:
  .1 NAUF particleboard core for intensive use wood doors.
  .2 Finishing of interior wood doors.

.2 Flush Wood Interior Fire Doors:
  .1 Fire rated wood doors - mineral core.

.3 Acoustic Wood Doors

.4 Solid Wood Interior Door Frames
  .1 Solid wood fire-rated interior door frames

### 1.2 RELATED WORK

| | | |
|---|---|---|
| .1 | Concrete Masonry Units | Section 04 22 00 |
| .2 | Wood doors in casework | Section 06 41 13 |
| .3 | Steel Doors and Frames | Section 08 11 13 |
| .4 | Door Hardware | Section 08 71 00 |
| .5 | Glass and Glazing | Section 08 81 00 |
| .6 | Painting | Section 09 90 00 |

### 1.3 REFERENCES

.1 All Work to conform to minimum standard for Premium Grade Work as specified in Quality Standards for Architectural Woodwork prepared by Architectural Woodwork Manufacturers Association of Canada (AWMAC) and the Architectural Woodwork Institute (AWI).

### 1.4 SUBMITTALS

.1 Prepare and submit shop Drawings in accordance with Section 01 33 23, and show the following:

  .1 Product data sheets for each type of door and frame

  .2 Door and frame schedules.
    .1 Provide columns for Stock Code Numbers for both doors and frames.

  .3 Materials and finishes.

  .4 Hardware preparation.

  .5 Installation instructions and details
    .1 Typical and special details.
    .2 Frame anchorage details.
    .3 Method and location of exposed fastenings.

.6 Storage and handling requirements

.7 Other pertinent information.

.2 Samples:

.1 Submit corner sample of wood door, 300mm x 300mm, cut away to show stile, rail, crossbanding, core, and face veneer, accompanied by written description.

.2 Submit wood veneer samples representing manufacturer's full range of available colours and finishes.

.1 Submit duplicate 200mm x 250 mm samples of colours selected by the Consultant, on veneer typical of grain patterns and colouration for the specified species and cut selected.

.3 Submit duplicate 200 x 250 m samples of each colour of plastic laminate finish and pattern required.

1.5 **PRODUCT HANDLING**

.1 Matchmark doors, panels, frames and windows with Stock Code Numbers as shown on the Door Schedule. If Stock Code Numbers are not shown on the Schedule, matchmark with Door Numbers.

.2 Deliver, store and handle components so as to prevent damage. Store components off the ground and under cover in a dry, protected area.

1.6 **WARRANTY**

.1 Provide an extended warranty of **three (3) years** from date of Substantial Performance against defects of workmanship including core ghosting, warping and delamination of veneer. Work showing defects during this period shall be repaired or replaced without cost to the Owner.

.2 Warranty to include hanging and finishing of any replacements that may be necessary.

## PART 2 - MATERIALS

2.1 **PRODUCTS**

.1 Provide premium grade, ultra-heavy duty, 5-ply, 45mm flush slab doors, finished with plastic laminate

.2 Plastic laminate finish shall be Arborite “Sliced Red Oak” colour, min. 1.2mm thick, diamond texture. Provide fire retardant laminate at rated doors.

.3 Typical Doors shall have particleboard core. Provide acoustic doors where indicated on schedules.

.4 Doors, including cores, adhesives, and finishes shall be low VOC, with no added urea-formaldehyde (NAUF), and FSC Certified Wood.

.5 Wood Doors shall be from one of the following manufacturers:
- .1 Baillargeon Door Inc.
- .2 Masonite
- .3 Lambton Doors
- .4 JWS Manufacturing Inc.
- .5 VT Industries
- .6 Marshfield Wood Doors
- .7 Mohawk doors

.6 Provide all wood doors and frames from a single manufacturer, to ensure uniformity in quality of appearance, finish and construction.

.7 Solid Wood Doors:

.1 Stiles and rails shall be bonded to core.

.2 Stiles: 107mm wide structural composite lumber

.3 Rails: 85mm wide structural composite lumber

.1 Anti-warp rail: provide central rail of 133mm wide structural composite lumber at doors wider than 914mm

.4 Edges: 11mm min. solid hardwood (Compatible colour edge)

.5 Core: solid mat formed particle board, density 513 - 577kg/$m^3$, conforming to CSA-O188. No added urea-formaldehyde resins.

.6 Adhesive: Type 1, Waterproof, no urea formaldehyde, VOC < 0.683 g/L.

.7 Face: Plastic Laminate bonded to 2mm min. hardwood veneer Crossband

.8 Heavy Duty Hollow Core Doors:

.1 Stiles: 107mm structural composite lumber

.2 Rails: 85mm structural composite lumber

.3 Edges: 16mm min. solid hardwood , to match face of door/

.4 Core: honeycomb core

.5 Lock Block:

.6 Adhesive: Type 1, Waterproof, no urea formaldehyde, VOC < 0.683 g/L.

.7 Face: Plastic Laminate bonded to 2mm min. hardwood veneer Crossband.

.9 Acoustic Doors:

.1 STC 40 or better.

.2 Stiles: 102mm structural composite lumber

.3 Rails: 76mm structural composite lumber

.4 Edges: 24mm min. solid hardwood (Compatible colour edge)

.5 Cores: Sound dampening material

.6 Adhesive: Type 1, Waterproof, no urea formaldehyde, VOC < 0.683 g/L.

.7 Face: Plastic laminate bonded to 2mm min. hardwood veneer crossband veneer

.8 Install sound gaskets and automatic door bottoms supplied with door hardware

.10 Fire Rated Doors:

.1 Provide rated doors where indicated or required, with U.L.C. or Warnock Hersey labels attached. Openings must conform to limits noted in Ontario Building Code.

.2 Rails: 51mm fire proof, structural composite material

.3 Edges: 24mm min. solid hardwood (Compatible colour edge)

.4 Cores: Non-combustible mineral core

.5 Adhesive: Type 1, Waterproof, no urea formaldehyde, VOC < 0.683 g/L.

.6 Face: Plastic Laminate bonded to composite crossband.

.11 Seal top and bottom of all doors.

.12 Prepare doors for installation of glass where indicated on door schedule. Provide glazing stops of solid oak, square design. Finish stops using finishing nails - no staples. Provide U.L.C. approved metal glazing stops where required for fire rating.

.13 Manufacture doors in accordance with CSA-O132.2.

.14 Provide rated doors where indicated or required, with U.L.C. or Warnock Hersey labels attached. Openings must conform to limits noted in Ontario Building Code.

2.2 **FINISHING**

.1 Carefully prepare all work to receive finish. Thoroughly sand all wood surfaces to remove machine marks and make dust-free before finishing.

.2 Finish edges with one coat of selected stain, one coat of sealer, sanded smooth, and two coats of finish as specified. Apply finish in accordance with best practice and the resultant finish must be of highest quality for furniture use.

.3 The colour of stain shall be selected by the Consultant.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

.1 Fit all wood doors accurately in their frames. Doors must swing easily and close tightly without movement when latched.

**END OF SECTION**

## PART 1 – GENERAL

### 1.1 SECTION INCLUDES:

.1 Supply of door hardware for interior steel doors.

.2 Supply of door hardware for interior wood doors.

.3 Supervision and inspection of door hardware installation by hardware supplier.

.4 Supply and installation of automatic operators.

### 1.2 RELATED SECTIONS

.1 General Requirements Division 01

### 1.3 REFERENCE STANDARDS

.1 CAN/CGSB-69.17-M86 Bored and Pre-assembled Locks and Latches

.2 CAN/CGSB-69.18-M90/ANSI/BHMA-A156.1-1981 Butts & Hinges

.3 CAN/CGSB-69.19-M93/ANSI/BHMA-A156-3-1989 Exit Devices

.4 CAN/CGSB-69.20-M90/ANSI/BHMA-A156-4-1986 Door Controls (Closers)

.5 CAN/CGSB-69.29-93/ANSI/BHMA-A156-13-1930 Mortise Locks & Latches

.6 CAN/CGSB-69.34-93/ANSI/BHMA-A156.18-1987 Materials & Finishes

.7 Canadian Steel Door & Frame Manufacturers Association (CSDFMA), Canadian Metric Guide for Steel Doors & Frames (Modular Construction

.8 NFPA 80-1995 – Fire Doors and Fire Windows

### 1.4 REQUIREMENTS OF REGULATORY AGENCIES

.1 Hardware for doors in fire separations and exit doors shall be certified by a Canadian Certification Organization accredited by the Standards Council of Canada.

### 1.5 SUBMITTALS

.1 DATA AND SAMPLES:

.1 Submit product data and samples to the Consultant in accordance with Section 01 33 23, Shop Drawings, Product Data and Samples.

.2 Submit three (3) copies of product data sheets with the finish hardware schedule showing all items of hardware to be used on the project. Identify each hardware item supplied under this section by product number, function, hand & finish. Finish hardware schedule to be in conformance of door and Hardware Institute Standards. Three (3) copies of catalogue cuts and other data required to identify individual components listed and/or to

demonstrate compliance with specified requirements for all items contained in the finish hardware set.

.3 Submit one sample of each of the following items:

.1 Butt hinges
.2 Continuous hinges
.3 Door closers
.4 Exit devices
.5 Overhead stops
.6 Storeroom set with lever trim

.4 Identify each sample by a label indicating location for installation, applicable specification paragraph number, brand name and number, finish, and hardware package number.

1. Samples will be retained by the Consultant during the initial review period, but not exceeding one month. Samples will be returned at that time and, if acceptable, they may be incorporated into the Work.

.5 Substitute new samples for those rejected by the Consultant.

.6 Do not supply door hardware to the site until all samples are approved by the Consultant.

.2 DOOR HARDWARE LIST:

.1 Submit six copies of a detailed final door hardware list prepared by a qualified Architectural Hardware Consultant.

.2 List all items to be furnished and delivered under this section.

.3 Indicate door hardware proposed, identifying each item by manufacturer name, manufacturer's catalogue model number, material, function, finish, location, and other pertinent information.

.4 The list shall be in the same format as the door hardware list bound in this project manual.

.5 Approval of the Final Door Hardware List by the Consultant and the Owner shall not relieve the Contractor from responsibility for providing all required door hardware.

.3 TEMPLATES:

.1 Within ten working days of being requested by the Contractor, submit templates for door and frame preparations and mounting of door hardware items.

.2 Identify each template by label indicating applicable specification paragraph number, brand name and number, door number, and hardware package number.

.3 Submit manufacturer's specifications, catalogue cuts, and other data required to identify individual components listed and to demonstrate compliance with specified requirements for items contained in the final door hardware list. Submission of manufacturer's full line brochures is not acceptable.

.4 BEST FACTORY ORDER:

.1 Within 2 days of submitting the order for Best cylinders or locks, send one (1) copy of the order c/w the Approved hardware list to the Simcoe County District School Board, Attention: David Kreuter, Design and Construction 1170 Highway 26 Midhurst, Ontario L0L 1X0

## 1.6 MAINTENANCE DATA

.1 Prior to Substantial Performance, provide the following information for inclusion in the Maintenance manuals, in accordance with Section 01 78 00, Closeout Submittals:
- .1 Name of hardware distributor, address and contact name
- .2 Copy of final "as-built" finish hardware schedule
- .3 Wiring diagrams, elevations, risers, point to point
- .4 Copy of final keying schedule
- .5 Copy of floor plans with keying nomenclature assigned to door numbers as per the approved keying schedule
- .6 Maintenance instructions for each product
- .7 Catalogue cut sheets and product specifications for each product
- .8 Parts list for each product
- .9 Installation instructions for each product
- .10 A copy of the certification letter from the AHC, required under Subsection 3.3 below, confirming that hardware has been supplied and installed correctly.

.2 Provide parts list, manufacturers' instructions, and operation and maintenance data for each type of door hardware for incorporation into maintenance manual specified in Section 01 78 00, Closeout Submittals.

.3 Instruct the Owner's maintenance staff regarding proper care, cleaning, and general maintenance of door hardware.

## 1.7 MAINTENANCE MATERIALS

.1 Provide maintenance materials, in accordance with Section 01 78 00, Closeout Submittals.

.2 Supply four sets of wrenches for door closers, locksets, latchsets, and exit devices.

.3 Supply four sets of other special parts or tools required for proper maintenance and adjustment of door hardware (excluding tools required for keying.)

## 1.8 DELIVERY AND STORAGE

.1 Package each item of hardware, including fastenings, separately or in like groups of hardware. Label each package as to item definition and location and corresponding with the hardware list.

.2 Ensure shipments are made in a timely manner to ensure progress of the Work and to comply with the Contractor's construction schedule.

.3 Store hardware in a locked, clean and dry area and in a manner to allow easy access to each item group as needed, without disruption of the storage arrangement. Provide a written confirmation to the Consultant that the storage area is adequate and secure.

## 1.9 WARRANTY

.1 Submit a warranty for door hardware on a form approved by the Owner and in accordance with the conditions of the Contract, but for a period of three (3) years, unless specified otherwise. Where a manufacturer's standard warranty period exceeds three years it shall prevail.

.2 The warranty for both fire exit devices and power door operators shall be for a period of five (5) years.

.3 The warranty for door closers shall be for a period of ten (10) years.

.4 Provide a lifetime warranty for all mortise hinges.

.5 Door hardware warranties shall cover all defects in material and workmanship that become apparent during the warranty period and such defects shall be made good or the defective product shall be replaced, to the satisfaction of the Owner and at no cost to the Owner.

# PART 2 – PRODUCTS

## 2.1 DOOR HARDWARE – GENERAL

.1 The hardware supplier shall thoroughly review the door hardware list included with this project manual, the architectural door and hardware schedules, and the drawings prior to preparing the final door hardware list.

.2 **The base bid shall be based on the manufacturers and products specified in the Hardware Schedule.**

.3 Use one manufacturer's products only for all similar items.

.4 Ensure that the hardware specified is suitable in both dimension and function for the intended purpose and complies with building code requirements. Advise the Consultant of discrepancies or omissions.

.5 KEYING:

.1 All locks shall be 7-Pin removable core by Best Locks.

.2 As part of the cost of this Section, the door hardware Subcontractor shall obtain brass construction cores for all locks from Best Locks.

.3 As part of the cost of this Section, all locks and cylinders are to include Best permanent cores great-grand master keyed to the Owner's requirements. Simcoe County District School Board will install the Permanent Cylinders.

.7 STRIKES: ANSI with lip, except deadlock strikes, which shall be ANSI without lip.

## 2.03 FASTENINGS

.1 Supply screws, bolts, expansion shields and other fastening devices required for the satisfactory installation and operation of hardware, and as recommended by the hardware manufacturers for long life under hard use.

.2 Exposed screws for installing hardware shall have Phillips or Robertson heads.

.3 Exposed fastening devices shall match the finish and material of hardware.

.4 Where a pull is scheduled on one side of a door and a push plate on the other side, supply fastening devices, and install so the pull can be secured through the door from the reverse side. Install the push plate to cover fasteners.

.5 Use fasteners compatible with material through which they pass.

.6 All door closers shall be through-bolt mounted.

# PART 3 – EXECUTION

## 3.01 INSTALLATION INSTRUCTIONS

.1 Furnish door and frame manufacturers with complete instructions and templates for preparation of their work to receive hardware. Advise door and frame manufacturers to be aware that strike heights as listed in the table below are required for this project.

.2 Supplier shall furnish manufacturers' instructions for proper installation of each hardware component.

## 3.02 INSTALLATION

.1 All doors, frames, and finishing hardware shall be installed based on DHI installation guide for doors and hardware (ANSI/DHI A115.1G-1994)

.2 Power door operators shall be installed by hardware supplier. Low voltage control wiring to push button locations, exit device release, and 100mm x 100mm back boxes to be completed by electrical subtrade (Division 16).

.3 ARCHITECTURAL HARDWARE CONSULTANT:

.1 The hardware supplier shall have in its employ an Architectural Hardware Consultant who is a current member of the American Society of Hardware

Consultants, and who shall be made available for consultation during the course of construction at no additional cost to the Owner.

.2 The Architectural Hardware Consultant shall supervise hardware installation, provide assistance to the Hardware Installer, and carry out inspection and provide written certification of the finished door hardware installation.

.3 Allow for a minimum of three inspections during the course of hardware installation and one final inspection.

.4 Ten percent (10%) of this subtrade's contact will be considered as fair value for supervision and inspection with regard to progress certificates.

.5 Locate and mount hardware at standard location dimensions in accordance with CSDFMA, Canadian Metric Guide for Steel Doors and Frames (Modular Construction), and as indicated in the following table:

| HARDWARE MOUNTING HEIGHTS | |
|---|---|
| **HARDWARE ITEM** | **DIMENSION ABOVE FINISHED FLOOR** |
| LOCKSET or LATCHSET | 1024mm to Centreline of Strike |
| DEADLOCK | 1200mm to Centreline of Strike |
| EXIT DEVICE | 950mm to Centreline of Strike |
| PUSH PLATE/DOOR PULLS | 900mm to Centreline of Plate or Pull |

.1 The Hardware Installer shall carefully check manufacturer's installation instructions supplied with hardware products for conflicts with the above noted dimensions.

.2 The Hardware Installer shall use manual or "Yankee" screw drivers to turn screws into pre-drilled pilot holes for installation of hinges on mineral core fire protection rated doors. Please note that other methods of installation may void the door manufacturer's warranty.

.3 The recommended mounting heights shall be considered a general guide unless conditions such as intermediate rails and lines of glass dictate otherwise.

.6 Locate door stops to contact doors 75mm from latch edge.

.7 Install hardware and trim square and plumb to doors.

.8 Install mullion stabilizers at centre mullions at double doors and intermediate mullions on multiple door arrangements.

.9 Supply locksets to millwork subcontractor for 35mm thick doors where such doors are a part of millwork units. Keying shall be in accordance with the building keying system for doors.

## 3.3 ADJUSTING, INSPECTION, AND CLEANING

.1 Adjust hardware so that latches, locks and closers operate smoothly and without binding and with minimal resistance in use.

.2 Ensure doors with closers close firmly and against wind and building air pressure, and can be opened readily as suitable for installation.

.3 Inspection:

.1 Upon completion of door hardware installation, the Architectural Hardware Consultant, employed by the Hardware supplier, shall conduct an inspection of all door hardware as installed, accompanied by the Contractor, the Consultant, and the Owner's representative.

.2 If requested by the Consultant, the technical representative for each manufacturer of hardware used in the Work shall be in attendance during the hardware inspection.

.3 During the inspection, the Architectural Hardware Consultant shall note all unsatisfactory installations and products and re-inspect these items after re-adjustment or replacement to ensure all hardware is in optimum working condition and specified function.

.4 Upon completion of door hardware installation, the Hardware Supplier shall submit a written certificate that all hardware has been correctly supplied and installed in accordance with the drawings, specifications, schedules, and approved final door hardware list, for type, function, and location, and that door hardware has been checked and adjusted.

.4 Cleaning:

.1 Clean hardware after installation following the hardware supplier's recommendations.

.2 At project completion all items of door hardware shall be clean and free from disfigurement. The Contractor shall repair or replace hardware found to be defective.

.5 The Owner may appoint an independent hardware consultant to provide an additional inspection of the installed hardware. A cash allowance has been included in the Contract for this purpose. This shall not alleviate the Contractor or hardware supplier from the duty to inspect their work, as specified above.

## 3.4 ADDITINONAL NOTES

**ALL BIDDERS OF THE FINISHING HARDWARE SHALL SUBMIT THEIR PRICES BASED ON BEST LOCKS, SARGENT EXIT DEVICES AND LCN DOOR CLOSERS. IF THE BASE BID IS NOT BASED ON THE THESE PRODUCTS THE BID WILL NOT BE ACCEPTED.**

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 RELATED WORK SPECIFIED ELSEWHERE

| | | |
|---|---|---|
| .1 | Architectural Wood Casework | Section 06 41 13 |
| .2 | Joint Sealants | Section 07 92 00 |
| .3 | Steel Doors and Frames | Section 08 11 13 |

### 1.2 REFERENCES

| | | |
|---|---|---|
| .1 | CAN/CGSB-12.1 | Tempered or Laminated Safety Glass |
| .2 | CAN/CGSB-12.3 | Flat, Clear Float Glass |
| .3 | CAN/CGSB-12.8 | Insulating Glass Units |
| .4 | CAN/CGSB-12.10 | Glass, Light and Heat Reflecting |
| .5 | CAN/CGSB-12.20 | Structural Design of Glass for Buildings |
| .6 | ULC CAN4-S104 | Fire Tests of Door Assemblies |
| .7 | ULC CAN4-S106 | Fire Tests of Window and Glass Block Assemblies |
| .8 | ASTM E2190-02 | Insulating Glass Unit Performance and Evaluation |
| .9 | CAN/ULC-S101M | Standard Methods of Fire Endurance Tests |

### 1.3 QUALITY ASSURANCE

.1 Coordinate with manufacturer of fire rated doors, frames and screens to ensure that the fire glass provided for the work is an acceptable component of their tested assembly, and can be included as part of their labelled products.

### 1.4 WARRANTY

.1 Warranty all glass to be free from defects in workmanship and materials of any kind for a period of **ten (10) years**.

.2 Warranty all fire rated glass to be free from defects in workmanship and materials of any kind for a period of **five (5) years**.

.3 Replace (including removal and installation) all glass found to be defective.

### 1.5 SUBMITTALS

.1 Submit a glazing schedule, listing all openings, glazing materials, required fire ratings, maximum glass sizes, and a comments column listing other pertinent information.

.2 Submit data sheets for fire rated glass, including ULC approvals.

.3 Submit colour chart for selection of colour for spandrel glass.

**PART 2 - PRODUCTS**

2.1 **MATERIALS**

.1 Float Glass:
- .1 conform to CAN/CGSB-12.3
- .2 6mm thick unless specified or indicated otherwise.

.2 Tempered Glass: clear tempered glass conforming to CAN/CGSB 12.1.

.3 One-Way Glass: "Solarcool Greylite" by PPG or two-way mirror glass providing vision in one direction only with 30% difference in light level on opposite sides of glass.

.4 Laminated Glass: 3 mm glass, 0.015 lamination, 3 mm glass.

.5 Tempered Laminated Glass: 3 mm tempered glass, 0.015 lamination, 3 mm tempered glass.

.6 Coloured Glass: Saflex coloured laminated glass with Vanceva colour interplay.

.7 Insulating Glass Units:
- .1 Type 1: Exterior 6mm clear laminated glass with low e coating on surface 2, 13mm argon gas filled space, and 6mm clear inner glass.
  - .1 In all stairwells, corridors, vestibules and Gym interior pane shall also be 6mm clear laminated glass.
  - .2 Thickness of glass shall be increased as required by size of opening and by impact resistance requirements in Gym.
- .2 Type 2 (Obscure): Exterior 6mm clear laminated glass with low e coating on surface 2, 13mm argon gas filled space, and 6mm clear float glass inner pane with acid etched glass, ie. Pilkington Optifleat Opal. Vision through type 2 glazing must be sufficiently obscured to provide privacy.
- .3 Type 3 (Spandrel): Exterior 6mm tempered glass with ceramic frit coating and safety scrim backing. Colour to be selected by Consultant. Interior to be 1mm thick anodized aluminum face sheet laminated to rigid fiberglass insulation. Provide anchorage to aluminum to insure permanent fastening. Reinforce panel as necessary to insure that face does not deflect or "oilcan".
- .4 Type 4 (coloured glass): Exterior 6mm coloured laminated glass. Interior 6mm coloured laminated glass. 13mm argon gas filled space. Coloured glass to be Trulite laminated glass with Vanceva colour interior.
  3 colours required. Colour selection to be made by Consultant after submission of samples.
- .5 All exterior glazing shall consist of hermetically sealed, Low E units conforming to CAN/CGSB 12.8.

.8 Fire Rated Glass
- .1 Fire protection rated, impact resistant, laminated clear glass ceramic; in all frames and doors where fire rated separations are required:
  - .1 "FireLite Plus" by Technical Glass Products, "Pyran Platinum L" by Schott North America, or "Keralite L" by Vetrotech Saint-Gobain.
- .2 Fire rated glass must bear a label acceptable to the local authorities having jurisdiction.
- .3 Coordinate with manufacturer of hollow metal products to ensure the glass provided is an acceptable component in their labelled doors and frames.

.9 Sound Insulating Glazing:
- .1 for doors and screens in acoustic partitions
- .2 For installation in doors, provide sealed units with 6mm, clear laminated glass - 12mm air space - 6mm clear, laminated glass.
- .3 For installation in screens, provide two panes of 6mm laminated glass, installed separately, with minimum 50mm air space between panes.

.10 Setting Blocks: Neoprene, 80 durometer hardness, 102mm x 6mm width to suit glass, to extend from the fixed stop to the opposite face of the glazing.

.11 Spacer Blocks: Neoprene, thickness to provide a minimum glass to face clearance of 3mm.

.12 Glazing Tapes: Pre-formed polyisobutylene- butyl glazing tape with integral shim strip, 10-15 durometer hardness, paper release, black; Tremco "Polyshim" or approved equal.

.13 Gasket: Black neoprene "U" cavity type with lock strip.

.14 Sealant: One component silicone; Spectrum 2 by Tremco.

.15 Acoustic Sealant: Tremco Acoustical Sealant

## PART 3 - EXECUTION

### 3.1 PREPARATION

.1 Examine framing, with glazier present, for compliance with the following:
- .1 Manufacturing and installation tolerances, including size, squareness, offsets at corners.
- .2 Minimum required face or edge clearances.
- .3 Edge damage or face imperfections.

.2 Do not proceed with glazing until unsatisfactory conditions have been corrected.

.3 Clean frames immediately before glazing. Remove any coatings not firmly bonded to substrates.

### 3.2 SITE CUTTING OF GLASS

.1 Site cutting of glass is prohibited except with the express permission of the Consultant after review of the Contractor's proposed methods.

3.3 **INSTALLATION**

.1 Conform to the recommendations of the Glass Association of North America (GANA) Glazing Manual, most recent edition.

.2 Inspect glass as installation proceeds. Discard any glass edge damage that could affect performance. Discard any glass with visible defects.

.3 Protect edges of glass from damage during handling and installation.

.4 Cut wired and patterned glass so that pattern is parallel.

.5 Set lights on setting blocks placed at quarter points. Glaze lights with glazing tape or dry gasket glazing system, channel shape to wrap completely around glass edge, or other approved means to prevent rattle.

.6 Replace loose stops in their original positions, set all screws tight, countersink all nails.

3.4 **INTERIOR GLAZING (DRY METHOD)**

.1 Glaze interior hollow metal doors and screens as follows:
- .1 Fire-rated applications to be glazed as specified below.
- .2 Quiet Rooms to be glazed with laminated tempered glass or, where fire-rated, laminated fire glass.
- .3 All glazing of screens in music practice rooms shall be sound insulating glazing, as specified above.
- .4 All other hollow metal work to be glazed with laminated glass, unless noted otherwise on door schedule.

.2 Apply glazing tape to permanent stop; use tape of thicknesses to suit installation, projecting 1.6mm above sight line.

.3 Place setting blocks at 1/4 points and not less than 150mm from edges of glass. Remove protective paper from tape immediately prior to placing glass. Centre glass in opening and set on setting blocks. Press glass firmly against tape.

.4 Apply glazing tape to perimeter of glass. Install removable stop, taking care not to dispace tape. Press firmly to ensure continuous contact with glazing.

.5 At acoustic glazing, provide acoustic sealant at full perimeter of glass at fixed stop before installing removable stop.

.6 Finish to neat appearance by trimming tape above sightline.

3.5 **FIRE RATED GLAZING**

.1 Install impact resistant fire glass in all rated doors and screens.

.2 Neither products incorporating applied safety film, nor wired glass products will be permitted; use specified products only.

.3 Install fire rated glass so that the appropriate rating marking remains permanently exposed.

.4 Install fire rated glass vertically into fire rated frames. Glass and frames shall be of equivalent fire separation rating.

.5 Installation shall be in accordance with tested assemblies; ULC or cUL, or equivalent acceptable to authorities having jurisdiction.

.6 Apply glazing tape to stops, using tape of thickness to suit installation, flush with site lines, with stretch allowance considered.

.7 Centre glass in opening and set on setting blocks located at quarter points of glass but no more than 150mm from corners.

.8 Install glass, glazing tape and removable stops.

3.6 **CLEANING**

.1 As work progresses clean all glass, including fittings. Remove all setting and glazing compounds from adjacent surfaces. Remove all finger and hand prints and other soil.

.2 Protect glass from contact with contaminating substances during construction.

.3 Clean and wash glass by methods recommended by glass manufacturers.

.4 All glass shall be cleaned immediately prior to the Consultant's review for Substantial Performance and again immediately prior to occupancy of the building by the Owner.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 WORK INCLUDED

.1 Patching and repair of concrete slab, to prepare for new flooring.

.2 Levelling of concrete floors to create maximum 3mm slope over a distance of 3000mm at changes in floor mateiral.

.3 Provision of moisture reduction barrier, to reduce moisture vapour transmission through new sections of concrete slab. Apply to properly prepared sound and stable concrete substrates, at least 7 days old.

.1 Apply moisture reduction barrier over all new infill sections of concrete floor scheduled to receive any floor finish. Moisture reduction barrier to cover new concrete and extend over adjacent existing concrete indicated to receive new flooring, feathering to meet existing slab level at intersection with existing flooring.

.4 Note that new concrete slabs on grade are specified to contain a moisture vapour reduction admixture (MVRA). Areas of concrete containing the MVRA do not require moisture reduction surface coating.

### 1.2 RELATED WORK

| | | |
|---|---|---|
| .1 | Cast-in Place Concrete | Section 03 30 00 |
| .2 | Ceramic Tiling | Section 09 30 16 |
| .3 | Resilient Flooring | Section 09 65 00 |

### 1.3 SUBMITTALS

.1 Submit product data sheets, MSDS, and installation instructions.

### 1.4 STORAGE

.1 Store materials in original containers in a dry area at normal room temperature (approximately 20°C).

## PART 2 - MATERIALS

### 2.1 MATERIALS

.1 Patching Compound:

.1 Ardifix by Ardex Americas; two-part polyurethane repair compound

.2 Moisture-Reduction Barrier:

.1 MC Rapid Moisture Control System by Ardex, one-coat; 100% solids epoxy moisture management system, for suppressing moisture vapour emissions in new or existing concrete.

.3 Levelling Agent:

.1 K60 Arditex Rapid Setting Latex Smoothing and Levelling Compound by Ardex; Portland cement based, self-smoothing, trowelable, latex levelling compound.

.4 Equivalent products as manufactured by Mapei or Laticrete will also be considered, subject to proof of equivalent properties and capabilities. Materials must be compatible with each other and with mortars and adhesives used for floor finishes.

## PART 3 - EXECUTION

### 3.1 GENERAL

.1 Confirm environmental requirements with product manufacturer.

.2 All moving joints and moving cracks must be continuous through entire floor system; install flexible compound designed for this purpose.

.3 Flooring restoration and moisture barrier compounds to be "feathered" out at intersection with existing flooring to avoid raising floor level at junction between new and existing flooring.

.4 Flooring restoration and moisture control system must be in place prior to installation of partition walls. Moisture control barrier must be continuous under new partitions and furring.

### 3.2 EXISTING CONDITIONS

.1 Examine surfaces to receive the work of this Section and proceed only when conditions are satisfactory for a proper installation.

.2 Do not apply over gypsum-based substrates or gypsum-based patching compounds.

.3 Verify substrate is free of bond-inhibiting or bond-breaking materials such as curing compounds and dust.

.4 Test concrete substrate using a Calcium Chloride Test (ASTM F1869) and concrete moisture probes to measure the relative humidity. Concrete substrate shall be acclimated to 23°C and 50% relative humidity prior to testing.

### 3.3 SURFACE PREPARATION

.1 Substrate must be structurally sound, dry, solid and stable. Clean surface of dust, dirt, oil, grease, paint, curing compounds, concrete sealers, loosely bonded toppings, old adhesive residues (including cutback adhesive residue) and any other substances that may prevent or reduce adhesion, by mechanical methods acceptable to the Consultant and the product manufacturer. No chemical etching is permitted.

.2 Mechanically prepare cracks as well as control, construction and expansion joints with a diamond crack-chasing/ concrete-cutting blade. Overcut the joint width to obtain a sound substrate. Use an industrial type of vacuum to completely remove the dust and contaminants. Use an appropriate attachment with a rubber seal around the suction end of the nozzle for maximum pickup of contaminates and dust.

.3 Patch existing concrete floors with patching compound in accordance with manufacturer's printed instructions. Patch concrete before applying moisture reduction barrier.

3.4 **INSTALLATION - MOISTURE REDUCTION BARRIER**

.1 Apply moisture reduction barrier in accordance with manufacturers printed instructions. Apply to all new concrete infil, and to existing concrete to receive new floor finishes.

.2 Apply using application methods and tools prescribed by the manufacturer. Allow 24 hours before re-coating.

.3 Apply product at rate recommended by the manufacturer; assume median of application rate range is required for first application. Apply additional product as required to ensure complete coverage.

.4 Finished application shall cover concrete floors completely, without voids or pinholes.

.5 Allow moisture reduction barrier to cure as recommended by the manufacturer, generally for a minimum of 4 hours and a maximum of 8 hours, prior to installing smoothing and levelling compound.

.6 Expansion and other movement joints must continue through finished floor system.

.7 Confirm that new concrete in building addition contains moisture vapour reduction admixture (MVRA). Any concrete at slab-on-grade without the MVRA must receive surface-applied moisture reduction barrier.

3.5 **INSTALLATION - SMOOTHING / LEVELLING COMPOUND**

.1 Apply smoothing and levelling compound over moisture reduction barrier, to smooth and level floor prior to application of resilient flooring. Surface must be properly prepared, in accordance with manufacturers requirements.

.2 Protect from excessive heat or drafty conditions during curing period.

.3 Consult manufacturer to confirm when flooring materials may be installed. Do not apply adhesive or flooring before material is completely dry; for ARDEX K 60, cure 16-24 hours at 21°C (70°F) prior to installing finish flooring.

3.6 **CLEANUP**

.1 Fresh, wet materials can be cleaned off with soapy, warm water.

.2 Cured material must be mechanically removed from surfaces.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 WORK INCLUDED

.1 Supply and installation of new gypsum board ceilings and bulkheads and patching of existing in the area.

### 1.2 RELATED WORK SPECIFIED ELSEWHERE

| | | |
|---|---|---|
| .1 | Rough Carpentry | Section 06 10 00 |
| .2 | Steel Doors and Frames | Section 08 11 13 |
| .3 | Painting | Section 09 90 00 |

### 1.3 REFERENCES

.1 ASTM International

| | | |
|---|---|---|
| .1 | ASTM C1396 | Standard Specification for Gypsum Board |
| .2 | ASTM C840 | Standard Specification for Application and Finishing of Gypsum board |
| .3 | ASTM C1629 | Standard Classification for Abuse-Resistant Nondecorated Interior Gypsum Panel Products and Fibre-Reinforced Cement Panels |

.2 CAN/ULC-S101 Standard Methods of Fire Endurance Tests of Building Construction and Materials

.3 Gypsum Association

| | | |
|---|---|---|
| .1 | GA-214 | Recommended Levels of Gypsum Board Finish |
| .2 | GA-216 | Application and Finishing of Gypsum Panel Products |

.4 The Gypsum Construction Handbook - CGC Inc.

### 1.4 DELIVERY AND STORAGE

.1 Handle and store materials carefully to prevent damage. Materials must be delivered to site in their original, unopened packages.

.2 Obtain approval of proposed locations for stockpiling material. Materials must be stored in an enclosed shelter providing protection from exposure to the elements. Provide any necessary temporary covers, skids and the like.

.3 Store all panels flat.

.4 Do not install damaged or deteriorated material but remove from Site.

.5 Materials as delivered shall bear manufacturer's name, brand name of material and where applicable, ULC designation.

### 1.5 ENVIRONMENTAL CONDITIONS

.1 Do not apply gypsum board or joint filler to surfaces that are damp or contain frost.

.2 During gypsum panel application and joint finishing, temperatures within work areas shall be within the range 12°C. to 25°C.

.3 Provide adequate ventilation to carry off excess moisture.

1.6 **RELATIONS WITH OTHER TRADES**

.1 Co-ordinate with mechanical and electrical Trades to ensure that all services are installed prior to application of wall board.

.2 Coordinate with mechanical and electrical trades for locations of access panels. Install access doors and panels supplied by those trades.

.3 Co-ordinate with forces installing insulation and vapour barrier in exterior soffits.

## PART 2 - PRODUCTS

2.1 **MATERIALS**

.1 All materials to conform to ASTM C1396 unless specified otherwise. Except where noted otherwise, products listed herein are produced by Canadian Gypsum Company (CGC). Equivalent products from Georgia Pacific (GP) and Certainteed will be accepted, subject to acceptance of equivalency by the Consultant.

.2 Gypsum panels:
- .1 Typical panels to be 16mm thick abuse resistant and mould resistant, to ASTM C1629.
- .2 CGC Sheetrock Mold Tough Abuse Resistant Firecode Core gypsum panels or GP ToughRock Fireguard X Mold-Guard Abuse Resistant gypsum board.

.3 Rated Gypsum panels:
- .1 to ASTM C1629. Abuse resistant, mould resistant, Type X-Fire Rated
- .2 CGC Sheetrock Mold Tough Abuse Resistant Firecode Core gypsum panels or GP ToughRock Fireguard X Mold-Guard Abuse-Resistant gypsum board.
- .3 Minimum thickness to be 16mm.

.4 Fibreglass Mat panels:
- .1 Where interior panels are to be installed before the building is fully enclosed, all rated and non-rated panels shall be fibreglass mat faced panels. Panels must be warranted by the manufacturer for extended exposure to the elements.
- .2 CGC Sheetrock Brand Glass-mat Panels Mold Tough or GP DensArmor Plus Abuse Resistant panel; 16mm thick.
- .3 Use fire rated versions where rating is required.
- .4 Tile Backer board: CGC Durock Cement Board Next Gen.

.5 Shaft liner
- .1 Mould and moisture resistant panels
- .2 to ULC tested assembly
- .3 CGC Sheetrock Enhanced Gypsum Liner Panels; 25mm

.6 Structural Steel Studs and Channels:
- .1 galvanized steel, as manufactured by Bailey Metal Products or approved alternate.
- .2 minimum 16 ga steel framing required at all partitions and framing.

.7 Metal Furring Channels:
- .1 sheet galvanized steel channel and accessories as manufactured by Bailey Metal Products, or approved alternate; to ASTM C645.
- .2 minimum 0.836 mm, design thickness, (20 ga) steel framing required at walls and where impact-resistant panels are to be applied.
- .3 minimum 0.455mm (25 ga) required for all other framing.

.8 Cold Rolled Carrying Channel: 38mm x 15mm zinc coated channel, minimum 20 gauge.

.9 Corner Bead and Casing Bead: 28 ga. galvanized steel with perforated flanges; one piece per location.

.10 Control Joint: CGC No. 093.

.11 Hanger wire: minimum 3.77mm (9ga) galvanized steel wire.

.12 Tie Wire: minimum 1.5mm (16 ga) galvanized soft annealed steel.

.13 Screws: CGC Brand Screws (or approved equal) of type recommended by the board manufacturer.

.14 Thermal Break: Permanent adhesive faced rubberized cork, 3 mm thick by width of stud on channel to be used between masonry in exterior wall and metal furring channels.

.15 Joint Treatment Material:
- .1 Joint compound, topping compound, laminating compound; to ASTM C474 and C475.
- .2 Use material recommended by board and tape manufacturer for the proposed use.
- .3 CGC/Synko Setting-Type joint compound, for use with CGC joint tape.

.16 Reinforcing Tape:
- .1 Paper or fibreglass mesh tape, as recommended by the panel manufacturer for the panel type.

.17 Finish materials
- .1 use level 5 finisher; CGC Sheetrock Tuff-HideT Primer-Surfacer.

.18 Acoustic sealant: Quietseal Pro as manufactured by Quietrock, or equivaltent as manufactured by CGC, Tremco or Presstite Division of Interchemical Corporation for acoustic partitions.

## PART 3 - EXECUTION

### 3.1 GENERAL

.1 Provide plumb, straight, level, rigid, and secure installation. Failing to achieve this result shall be cause for rejection and reinstallation of this work.

.2 Conform to The Gypsum Construction Handbook, ASTM C840, and these specifications. The most stringent requirements shall apply.

.3 Where walls run parallel and under steel joists, the joists shall be enclosed both sides with gypsum board to provide sound barrier between rooms. Fill with minimum 100 mm acoustic batt insulation.

### 3.2 CEILING SUSPENSION

.1 Do not regard grillage system indicated on drawings as exact or complete. The Specification for metal framing contained in CGC Gypsum Construction Handbook and ASTM C840 shall govern installation conditions not covered by this Specification. The more stringent specifications shall apply.

.2 Hangers

.1 Install hangers for suspended wallboard ceilings to support the grillage independent of walls, columns, pipes, ducts and the like. Erect plumb and securely anchor to the structure. Submit details of proposed method to the Consultant for approval. If so requested, test hangers to prove that anchorage is adequate to support the proposed loading. Erect hangers plumb and securely anchor to structural steel or support channels fastened to structural steel (DO NOT FASTEN TO STEEL DECK).

.2 Space hangers at 1200mm maximum o.c. along the carrying channels and not more than 150mm from ends (or as required to conform with fire tested assemblies where applicable).

.3 Carrying Channels

.1 Space channels at 1200mm maximum o.c. (or as required to conform with fire tested assemblies where applicable).

.2 Run channels transversely to structural framing members.

.3 Where splices are necessary, lap members at least 200mm and wire each end with two laps; avoid clustering or lining up splices.

.4 Attach to hangers by bending hanger under runner and securely wire in place with a saddle tie.

.5 Provide 25mm clearance between channels and abutting walls and partitions.

.4 Cross Furring

.1 Install drywall screw channels transversely across runner channels, joists or other supports.

.2 Space drywall screw channels at 600mm o.c. and not more than 150mm from perimeter walls. Provide 25mm clearance between channels and abutting walls and partitions. Use closer spacing if so noted on drawings.

.3 Secure drywall screw channels to each support with approved clip or attachment; splice joints by messing minimum 200mm and tying channels together with double strand 16 gauge tie wire.

.4 Level drywall screw channels to a maximum tolerance of 4mm over 3600mm.

.5 Drywall shall not be fixed directly to open web steel joists and the like. Provide cross furring as specified.

.5 Openings

.1 Frame openings with suitable channels; check clearances with respective Trades. Provide support for edges of boards at all cut-outs and openings in ceilings.

.2 Provide all additional hangers and supports for fixtures as required.

.3 Provide additional hangers and framing for enclosure of radiant heating panels.

.6 Bulkheads

.1 Furr out bulkheads in areas indicated and as required to conceal mechanical, electrical or other services in rooms where drywall finishes are scheduled, and elsewhere if called for on drawings.

.2 Use methods and materials as previously specified in this section. Drywall panels at bulkheads shall be as specified for walls.

## 3.3 STEEL STUD SYSTEM (PARTITION) INSTALLATION

.1 Conform to the guidelines for metal framing contained in The Gypsum Construction Handbook, CSA A.82.31, and these specifications. The most stringent requirements shall apply.

.2 Metal framing for partitions and wall furring shall be minimum 16 gauge.

.3 Attach metal runners at floor and ceiling to structural elements with suitable fasteners located 50mm from each end and spaced 400 mm. o.c. with toggle or molly bolts spaced 400mm o.c.

.4 Position studs vertically, engaging floor and ceiling runners, and spaced 400mm o.c., unless otherwise noted on drawings. When necessary, splice studs with 200mm nested lap and one positive attachment per stud flange. Place studs in direct contact with door frame jambs, abutting partitions, partition corners and existing construction elements. Where studs are installed directly against exterior walls install rubberized cork stip between studs and wall surfaces to provide thermal break.

.5 Anchor studs for shelf-walls and those adjacent to door and window frames, partition intersections and corners to ceiling and floor runner flanges with an approved crimping tool. Securely anchor studs to jamb and head anchor clips of door or borrowed-light frames by bolt or screw attachment. Over metal door and borrowed-light frames, place horizontally a cut-to-length section of runner, with a web-flange bent at each end, and secure with one positive attachment per flange. Position a cut-to-length stud (extending to ceiling runner) at vertical panel joints over door frame header.

.6 Stiffen partitions exceeding 3m long or 2.7m high with 19mm. cold rolled channels. Fix horizontally and provide the number of rows necessary to ensure a rigid installation. Provide other partition reinforcing necessary to support wall hung components, cupboards, closets and the like. Use 2 studs at jambs of openings and corners.

.7 Where horizontal runs of service lines are to be installed within the partition, erect studs with web openings aligned.

.8 Provide reinforcing and necessary stiffeners to support hollow metal frames and screens. Reinforcing to be capable of supporting screens rigidly and solid without deflection.

3.4 **WALL FURRING INSTALLATION**

.1 Metal framing for wall furring shall be minimum 16 gauge.

.2 Direct Furring Channel Attachment - Attach metal furring channels, vertically or horizontally spaced 400mm o.c. to masonry or concrete surfaces with hammer-set ro power-driven fasteners or concrete stub nails staggered 600mm o.c. on opposite flanges. Nest channels 200mm at splices and anchor with two fasteners in each wing. Where furring channel is installed directly to exterior wall, install thermal break strip between furring channel and wall. For horizontally placed channels attach maximum 100mm from floor and ceiling.

.3 Bracketed Furring Channel Attachment

.1 Attach adjustable wall furring brackets with serrated edges up, 900mm o.c. horizontally, 1200mm o.c. vertically, within 100mm of columns or other abutting construction, within 150mm of floor and ceiling, and as required above and below openings. Use 50mm cut nails in mortar joints of brick or clay tile or concrete block, or in field of lightweight aggregate blocks; use 16mm concrete stub nails or power driven nails or other suitable fasteners in monolithic concrete. Place fastener in top hole of bracket.

.2 Lay cold-rolled channels horizontally with flanges down, on furring brackets, plumb with other channels, and tie with double strand 16 ga. or triple strand 18 ga. wire at each junction with cold rolled channel.

.4 Free Standing Furring - In locations where wall furring is indicated as self-supporting, use steel studs and furring channels installed to provide a rigid frame to receive wall board.

3.5 **APPLICATION OF GYPSUM BOARD**

.1 Do not apply gypsum board until bucks, anchors, blocking, electrical and mechanical work are approved.

.2 Apply all gypsum board parallel to framing. Position all ends over studs. Use maximum practical lengths to minimize end joints. Fit ends and edges closely, but not forced together.

.3 Stagger joints on opposite sides of partition.

.4 Apply single, double or triple layers of gypsum board to metal furring as indicated using screw fasteners.

.5 Maximum screw spacing for single-ply gypsum board and face ply of 2-ply gypsum board to be 300mm o.c.

.6 Maximum spacing of screws for base-ply of 2-ply gypsum board over steel framing to be 300mm o.c. along edges of the gypsum board and 600mm o.c. into stud or furring channel in the field of the gypsum board.

.7 Use cement board as backer board wherever tile is to be installed to walls of shower partitions.

3.6 **CONSTRUCTION OF FIRE RATED PARTITIONS**

.1 Where fire rated construction is required, the thickness and number of layers of board shall be governed by rating required and material used in approved assemblies.

.2 Provide 1 hour rated beam enclosures, where required, to ULC design.

3.7 **CONSTRUCTION OF SUSPENDED AND FURRED CEILINGS**

.1 Apply gypsum panels of maximum practical length with long dimension at right angles to drywall furring channels. Position end joints over furring channel web and staggered in adjacent rows.

.2 Closely fit together, ends and edges but not forced together.

.3 Fasten panels to drywall furring channels with screws spaced a maximum of 300mm o.c. in field of panels and along abutting ends and edges.

.4 Provide control joints in ceilings as noted but maximum 7500 mm o.c. each way or at change in direction.

.5 Where noted on plans, provide bulkheads with steel framing and drywall finish.

3.8 **WALL FURRING**

.1 Apply gypsum panels parallel to framing. Position all edges over drywall furring channels with joints staggered in successive courses.

.2 Use maximum practical lengths to minimize end joints. Fit ends and edges closely, but not forced together.

.3 Fasten panels to channels with screws spaced a maximum 300mm oc.

3.9 **APPLICATION OF ACCESSORIES**

.1 Erect accessories straight, plumb or level, rigid and at proper plane. Use full length pieces where practical. Joints shall be made tight, accurately aligned and rigidly secured.

.2 Reinforce all vertical and horizontal exterior corners with cornerbead fastened with screws 200mm O.C. on both flanges along entire length of bead.

.3 Where assembly terminates against masonry or other dissimilar material, apply ledge trim over panel edge and fasten with screws or staples spaced 300 mm. oc.

.4 Power drive screws at least 9mm. from edges or ends of panel to provide uniform dimple 0.8mm deep.

.5 Where recessed reglets are noted on drawings, built into drywall assembly to provide edges flush with drywall.

3.10 **TAPING AND FILLING**

.1 Finish in accordance with GA-214, as follows:

.1 Exposed gypsum board to Level 5 finish, suitable for finish painting with semi-glass and gloss coatings. Use full skim coat of joint compound over entire surface to achieve smooth and uniform appearance.

.2 Concealed gypsum board to minimum Level 1 finish. Where a fire-resistance rating is required, finishing level must conform to ULC rated assembly design.

.2 Finish face panel joints and internal angles with joint system consisting of self-adhering cross-fibre fibreglass joint tape and joint compound installed according to manufacturer's directions and feathered out into panel faces. Note: If self-adhering joint tape is not used, taping compound will be required.

.3 Be sure drywall surface is dry and clean.

.4 Centre and apply drywall tape directly over joint, pressing firmly to ensure even adherence to surface. Eliminate wrinkles by pressing entire length of tape with drywall knife. Avoid overlapping tape at intersections. Cut tape with drywall knife.

.5 Cover taped joint with a layer of setting-type joint compound, forcing compound through the tape with a drywall knife or trowel to completely fill and level the joint. Allow joint to dry, and sand lightly. Apply second coat of setting-type or drying-type joint compound, feathering approximately 50mm beyond first coat. Let dry and sand lightly as required.

.6 To finish inside corners, bend tape with to form a "U" shape. Apply tape along one side only. Press tape into corner for approximately 30mm, then apply the other side. Work downward, alternating sides in this manner until tape is pressed firmly in place. Apply setting-type joint compound as specified above, first on one side for the length of the corner and then repeating the process on the second side.

.7 Finish fastener heads, corner bead and trim as required with two to three coats of joint compound, feathered out onto panel faces and sanded to a smooth surface.

.8 Provide skim coat over entire face of boards to ensure smooth surface for painting.

.9 Fill screw head depressions to bring flush with adjacent surface of gypsum board so as to be invisible after painting is completed.

.10 Sand dried taping compound lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.

.11 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for painting.

.12 Painting shall be done in accordance with Section 09 90 00.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 RELATED WORK SPECIFIED ELSEWHERE

.1 Gypsum Board Section 09 29 00
.2 Mechanical & Electrical Work

### 1.2 CEILING SYSTEMS

.1 This Specification includes the ceiling systems listed below, noted in schedules and shown on reflected ceiling plans.

.2 Ceiling systems shall be 610mm x 1220mm lay in exposed Tee system, rated and non- rated. Rated ceiling systems to conform to U.L.C. details.

.3 Work shall include ceiling panel removal and replacement at existing Corridor for electrical conduit work.

### 1.3 REFERENCE STANDARDS

.1 ASTM C635 Specifications for Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings

.2 ASTM C636 Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels.

.3 CAN/CGSB 92.1 Sound Absorptive Prefabricated Acoustical Units

### 1.4 DESIGN

.1 N.R.C. Range: Unless otherwise noted under description of ceiling system the N.R.C. Range shall be 60-65 (Table 1 of CAN/CGSB 92.1).

.2 Ceiling S.T.C.: Unless otherwise noted under description of ceiling system the S.T.C. rating shall be 35 or better.

.3 Light Reflectance: Unless otherwise noted under description of ceiling system, panels shall have a light reflectance co-efficient designation of L.R.1 (0.75 minimum). Table 3 of CAN/CGSB 92.1 refers.

.4 Support of HVAC and Electrical Equipment:
.1 Provide additional hangers as required for support of light fixtures and radiant panels, diffusers, etc.

### 1.5 SHOP DRAWINGS

.1 Reflected ceiling plans indicate proposed layout but this shall not relieve Contractor of responsibility for co-ordination of the work and provision of Shop Drawings where field conditions call for variation from proposed layout.

.2 Accurately locate lighting fixtures, ventilating grilles, sprinkler heads, exit lights and other ceiling fittings.

.3 Conform to Section 01 33 23.

1.6 **SAMPLES**

.1 Upon award of the Contract submit full size sample panels proposed for installation in the project. All panels subsequently used on the job shall match the approved sample.

.2 Submit samples of suspension system members for approval prior to commencement of installation.

1.7 **DELIVERY AND STORAGE**

.1 Transport, handle and store material in manner to prevent warp, twist and damage to tile and board edges and surfaces in accordance with the manufacturer's recommendations.

.2 Any warped and/or damaged boards, tile and trim shall be rejected and be replaced by new, straight, undamaged and acceptable materials at no cost to the Owner.

.3 Store material in warm, dry place away from water and the elements. Protect against undue loading stresses and shock.

.4 All packaged material shall be delivered in original manufacturers' wrappers and containers with labels and seals intact.

1.8 **PROTECTION**

.1 Exercise care in the execution of work under this Section to prevent damage to finished surfaces and adjacent work, and mechanical and electrical installations.

1.9 **EXTRA PANELS**

.1 Provide 2% typical acoustic panels of each type specified for use in maintenance work. Obtain receipt from the Consultant or Owner’s representative on site.

.2 Do not use panels supplied to Owner for maintenance work to make good any damaged or removed tile required by Contract.

1.10 **SPECIAL CLEANING**

.1 Clean, repair or replace dirty, discoloured or defective units or exposed suspension members to Consultant's satisfaction.

1.11 **ENVIRONMENT**

.1 Commence installation after building enclosed and dust- generating activities completed.

.2 Permit wet work to dry prior to commencement of installation.

.3 Maintain uniform minimum temperature of 15 deg. C. and humidity of 20% to 40% prior to, during and after installation.

1.12 **WARRANTY**

.1 The Warranty stipulated in the General Conditions of the Contract shall be deemed to include the following definition in reference to Work specified in this Section. The following will be considered defects without being limited thereto:

.1 Failure of the suspended ceiling to remain water level.

.2 Lifting or sagging of tile and board between supports.

.3 Staining and discolouration of factory finishes.

.4 Development of corrosion of galvanized ferrous metal.

.5 Development of cracks, splits and other surface deterioration in acoustic panels.

.6 Failure of hanging wire anchorage.

.2 The warranty period shall be **two (2) years**, commencing on the date of Substantial Performance of the Work.

## PART 2 - PRODUCTS

2.1 **MATERIALS - LAY-IN SYSTEM**

.1 Acoustic Ceiling Panels

.1 Refer to Finish Schedules for LAT numbers and locations as follows:

LAT 1: 610mm x 1220mm, min. NRC of .70, CAC min. 40; CGC Radar High NRC/CAC Firecode panels or Armstrong School Zone Fine Fissured 1811 Fire Guard. Minimum weight to be 6.74kg/m2 (1.38 lb/sq.ft.).

Acoustic Ceiling Panels shall confirm with requirements of ULC Assembly R210 or equivalent for one hour rated roof assembly.

.2 Suspension

.1 Suspension system to be fire rated "DX" 24mm wide faced T-bar by CGC. Equivalent grid by Chicago Metallic, or Armstrong will be accepted, contingent on its compatibility with the specified ceiling tiles. Suspension system shall conform with requirements of ULC Assembly R210 or equivalent for one hour rated roof assembly.

.2 Exposed interlocking tee grid system, formed out of cold rolled zinc-bond steel 0.54mm thick. Provide fire rated grid where fire ratings noted.

.3 Main Tees: 38mm x 25.4mm double web rectangular bulb top with capping plate in precoat baked-on white paint finish and incorporating holes for hangers and slots for connecting pieces, and capable of supporting 12.5 kg per 1200mm. for continuous spans and 6.5 kg per 1200mm span for single span without exceeding a deflection fo 1/360 of the span.

.4 Standard Cross-Tees: 25.4 x 25.4mm double web, bulb top, capping plate in precoated white baked-on finish, capable of supporting 11.3 kg per 600mm span without exceeding a deflection of 1/360 of span, and with positive interlock with main tees.

.5 Structural Cross-Tees as main tees, but with crimped ends for lapping bottom flange of main tees and interlocking tack ends to engage slots in main tees.

.6 Accessories:
.1 Splice plate, clips, screws, etc. as required to complete the installation. All galvanized finish.

.7 Concealed flat spline: 0.71mm flat steel spline.

.8 Edge Trim:
.1 0.635mm zinc bonded, cold rolled steel mould.
.2 Trim shall be minimum 22mm x 22mm angles].
.3 Provide 50mm wide shadowline trim at perimeter of corridor ceilings.

.9 Finish to tees and edge trim: flame resistant white baked enamel satin finish to match panel finish, 2 coats on exposed surfaces, 1 coat elsewhere.

.10 Carrying Channels: 38mm x 19mm cold rolled galv. weighing 1.042 kg per metre.

.11 Tie Wire: 1.6mm galvanized soft annealed steel.

.12 Hangers: 2.6mm galvanized steel wire.

.13 Screws: Corrosion resistant, self-tapping Philips truss head, of length and gauge to suit installation.

.14 Ceiling Hanger Pins (for fixing to metal): capacitor discharge ceiling hanger pins, by Continental Studwelding Ltd., or approved equivalent, of type approved by Consultant.

## PART 3 - EXECUTION

### 3.1 INSTALLATION - GENERAL

.1 Employ mechanics skilled in this Trade and install work in strict accordance with the system manufacturer's printed directions to produce a first class, true finish, free from dropping, warpage, soiled or damaged tile.

.2 Make provisions for thermal movement.

.3 Install hanger inserts in a manner approved by Consultant.

.4 Locate hangers directly over Main Tees and as close to intersections as possible. Secure hangers firmly to concrete inserts, steel joists and beams, bracing, etc. Do not install hangers to metal deck, provide separate grid off joists if required.

.5 Erect ceiling grid plumb and square with accurately fitted locked-in joints in true alignment, secure and rigid and with provision for thermal movement. Water level ceiling to tolerance of 1mm in 1m and maximum deviation of 4mm. from mean level.

.6 Frame around recesses fixtures, diffusers, grilles, and the like and provide heavier section hangers and supports as necessary to support same. Provide hanger within 150mm. of each fixture corner.

.7 Consult with Electrical and Mechanical Trades for requirements and provide access to valves and switches.

.8 Ensure that all hangers and carrying members are designed and spaced to support entire ceiling system including recessed lighting fixtures. Note, weight of fixtures is approximately 9-13.5 kg.

.9 Install panels only after all mechanical and electrical equipment, conduits, piping, telephone distribution, etc. are in place.

3.2 **INSTALLATION OF LAY-IN SUSPENSION SYSTEM**

.1 Generally hangers shall be spaced at not more than 1200mm o.c. directly above main runner tees, except at fixtures, where they shall be 600mm o.c. or closer as required for R210 Roof assembly and to adequately support fixtures. Locate hangers as close as possible to tee junctions. Locate first hanger within 300mm of perimeter wall.

.2 Install main tee runners continuous at 1200mm o.c. with interlocking structural cross-tees each side of fixtures at right angles to main tees. Install standard cross-tees generally at 90 degrees to main tees and as required to achieve pattern shown on reflected ceiling plans. Secure joints by web of tees; snaplock into place forming rigid connections. Main tees shall be as long as possible with butt ends joined by means of splice plates locked into webs.

.3 Frame up around light fixtures, grilles, diffusers, speakers, openings, etc. as required.

.4 Secure edge mouldings to walls, bulkheads and other vertical surfaces at perimeter edges of acoustic ceilings. Note special mouldings required.

.5 Securely fix hangers to tees by bending ends 90 degrees at the correct height and inserting through holes in top of main tees, then wiring around open side at least 3 turns twisting ends together. Flats shall be bolted to tees. Secure to concrete inserts in similar manner.

3.3 **LAY-IN PANEL INSTALLATION**

.1 End panels shall not be less than half full size and installation in each area shall be symmetrical, with end tiles and abutting opposite vertical wall surface to be of the same width. Do all necessary cutting and fitting neatly and accurately to suit grid openings and accommodate fixtures, grilles, detectors, speakers and the like located on the ceiling panels.

.2 Lay directionally patterned acoustic panels in one direction, parallel to the longest direction of the grid concerned.

.3 Place panels between tees so that edges bear evenly on flanges.

.4 Conform with reflected ceiling plans.

.5 Provide fire rated enclosures as required around light fixtures and mechanical equipment in fire rated ceilings, according to applicable ULC Design Criteria.

.6 Where mechanical equipment is located above the ceiling, panels shall be suitably and inconspicuously marked by the use of small colour-coded stickers. Mechanical equipment to be located shall include valves, dampers, heat exchangers, heat pumps, VAV boxes, electrical disconnects, as applicable, and other such equipment not visible from below.

3.4 **CLEANING**

.1 Upon completion, clean acoustic tile of all finger marks and other defacements.

.2 Remove all accumulated rubbish and excess materials from the site.

.3 Clean acoustic tile and replace any damaged tiles immediately before occupation of building by Owner.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 RELATED WORK SPECIFIED ELSEWHERE

| | | |
|---|---|---|
| .1 | Concrete Floors | Section 03 30 00 |
| .2 | Flooring Restoration | Section 09 01 61 |

### 1.2 REFERENCE STANDARDS

.1 **ASTM Standards**

| | | |
|---|---|---|
| .1 | F 141 | Resilient Floor Coverings |
| .2 | F150 | Standard Test Method for Electrical Resistance of Conductive and Static Dissipative Resilient Flooring |
| .3 | F 386 | Standard Test Method for Thickness of Resilient Flooring Materials Having Flat Surfaces |
| .4 | F 511 | Quality of Cut (Joint Tightness) of Resilient Floor Tile |
| .5 | F 710 | Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring |
| .6 | F 1066 | Specification for Vinyl Composition Floor Tile. |
| .7 | F 1304 | Deflection of Resilient Floor Tile |
| .8 | F 1344 | Specification for Rubber Floor Tile |
| .9 | F 1861 | Specification for Resilient Wall Base |
| .10 | F 2055 | Size and Squareness of Resilient Floor Tile by Dial Gage Method |
| .11 | F 2169 | Specification for Resilient Stair Treads |
| .12 | F 2195 | Specification for Linoleum Floor Tile |
| .13 | E 662 | Test Method for Specific Optical Density of Smoke Generated by Solid Materials. |
| .14 | E 1907 | Methods of Evaluating Moisture Conditions of Concrete Floors to Receive Resilient Floor Coverings |
| .15 | F 970 | Standard Test Method for Static Load Limit |

.2 **ULC**

| | | |
|---|---|---|
| .1 | CAN/ULC-S102.2 | Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Covering and Miscellaneous Materials and Assemblies |

.3 **Resilient Floor Covering Institute (RFCI)**

| | | |
|---|---|---|
| .1 | IP #1 | Recommended Installation Practice for Homogeneous Sheet Flooring, Fully-Adhered |
| .2 | IP #2 | Recommended Installation Practice for Vinyl Composition Tile (VCT) |
| .3 | Recommended Work Practices for Removal of Resilient Floor Coverings | |

.4 [**EOS/ESD Association, Inc.**

| | | |
|---|---|---|
| .1 | ANSI/ESD STM7.1 | ESD Association Standard Test Method for the Protection of Electrostatic Discharge Susceptible Items - Floor Materials - Resistive Characterization of Materials - Floor Materials |
| .2 | ANSI/ESD STM 97.1 | ESD Association Standard Test Method for the Protection of Electrostatic Discharge Susceptible Items – Floor Materials and Footwear – Resistance Measurement in Combination with a Person |

.3 ANSI/ESD STM 97.2 This document establishes test methods for the measurement of the voltage on a person in combination with floor materials and static control footwear, shoes or other devices

.4 ESD TR 7.0-01 ESD Association Technical Report for the Protection of Electrostatic Discharge Susceptible Items – Static Protective Floor Materials

.5 **International Organisation for Standardization (ISO)**

.1 ISO 23599 Assistive Products for Blind and Vision-Impaired Persons – Tactile Walking Surface Indicators.

1.3 **SUBMITTALS**

.1 Submit samples as per Section 01 33 23. Submit manufacturer's samples of actual sections of tile and accessories; include manufacturer's full range of colour and patterns available.

.2 Samples for Verification Prior to Installation: Submit full size samples of all types, colours, and patterns selected, indicating full range of patterning and colour variations.

.3 Coordinate with supplier of custom marbleized rubber flooring and stair tread/risers and Consultant to arrange for colour selections and provision of "strike-off" sample well in advance of material order date (8-10 weeks before materials are required).

.4 Submit manufacturer's printed installation instructions and maintenance manuals for each material specified.

1.4 **EXTRA MATERIALS**

.1 At completion of this Work hand over to Owner minimum 2% of each type and colour of flooring installed.

.2 Material to be in wrapped packages or fully labelled as to product and colour.

1.5 **WARRANTY**

.1 Submit manufacturer's warranty warranting material and performance for a period of **five (5) years** following the date of Substantial Performance of the Work.

**PART 2 - PRODUCTS**

2.1 **MATERIALS**

.1 Adhesives:

.1 Solvent-free white acrylic, as recommended by manufacturers of vinyl composite tile, rubber flooring, and base.

.2 VCT adhesive: Mapei Ultrabond ECO 711, Roberts Consolidated Premium VCT Adhesive 2057, or Flextile Flextech 710.

.3 Rubber base adhesive: Mapei Ultrabond ECO 575 or equal. Adhesive must produce good and permanent waterproof bond between wall surfaces and cove base.

.2 Vinyl Composition Tile (VCT):

.1 Conforming to CSA A126.1. Vinyl composition tile, asbestos free, 305mm x 305mm x 3.2mm.

.2 Standard Excelon Imperial Texture by Armstrong Flooring Inc., or Tarkett VCT by Tarkett North America.

.3 Colours to be selected by Consultant Allow for 2 colours per room, to later pattern.

.4 Base: 102mm x 3mm thick "Traditional" rubber cove base by Tarkett. Colour as selected at a later date by the Consultant.

.3 Sealer: Type approved by flooring manufacturer.

.4 Wax: Type approved by flooring manufacturer.

.5 Metal Edge Trim: Aluminum or brass alloy with lip of edge strip extending under and with shoulder finishing flush with top of resilient floor.

## PART 3 - EXECUTION

### 3.1 EXAMINATION AND TESTING

.1 Check floor surfaces for evidence of carbonation, dusting, excessive moisture or other defects affecting bond of adhesive. 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.

.2 Test concrete slab, using anhydrous calcium chloride test, in conformance with ASTM F1869. Do not proceed until moisture vapour emission rate is equal or less than 2.44kg/100$m^2$/24hours (3lbs/1000sq.ft./24hours).

.3 Confirm ph level of concrete is acceptable to manufacturers of adhesive and tile. Generally, ph level is to be 9 or less.

.4 Perform bond testing to confirm compatibility between concrete slab and adhesives.

.5 Take readings of room temperature and relative humidity (RH) before, during, and after installation. Environmental conditions shall conform to these specifications and the requirements of the material manufacturers.

.6 Provide test results to manufacturers of products proposed for use, and obtain approval of conditions before commencing installation.

3.2 **INSTALLATION - GENERAL**

.1 Do not start installation of resilient flooring until all other trades have completed their work and just prior to completion of building.

.2 The permanent HVAC system must be in operation before installing VCT.

.3 Keep all tile and accessories at the job site at room temperature (min.18°C. and max. 29°C.) for at least 48 hours before installation, during the work, and for minimum 48 hours after completion of installation.

.4 Ensure that interior air relative humidity (RH) is within limits recommended by the product manufacturers, as excessively high or low RH will affect curing of floor patching and levelling materials.

.5 Obtain approval from manufacturers for all adhesives, caulking, patching and levelling agents, installation methods, and environmental conditions, before proceeding with the work of this section.

.6 Ensure flooring materials are clean of any contaminants which would interfere with proper bonding.

3.3 **PREPARATION**

.1 On concrete floors, level depressions and cracks with nonshrinking latex joint filler. Patching and levelling products must be compatible with adhesives; obtain approval from manufacturer of adhesive. Do not use products containing gypsum.

.2 Report large cracks to Consultant. Do not proceed until remedied. Prime surface with approved primer.

.3 Thoroughly clean concrete floors of any substances deleterious to bond of adhesive.

.4 Close off areas where tile work is in progress to prevent deposit of dust or grit on slabs where tile is being laid.

3.4 **APPLICATION - RESILIENT TILE FLOORING**

.1 Apply adhesive uniformly with an approved notch-tooth spreader at the recommended rate. Do not spread more adhesive than can be covered before initial set takes place. Use waterproof adhesive throughout. Wipe up excess adhesive as work progresses.

.2 Install flooring in conform to floor patterns on drawings, where applicable.

.3 Unless otherwise indicated on drawings, lay out each area to be tiled symmetrically from its axis. Adjust starting line so width of border tile shall be at least one half tile. Distribute tiles having varying tones or texture evenly over entire floor area to avoid patches or streaks, and to produce homogeneous blend. Reject tiles having undue variations in colour, shade and texture. Make tile joints flush, uniform, in straight lines and as inconspicuous as possible.

.4 Lay out tiles so that joints are parallel to axis of room are continuous. All joints to be staggered.

.5 Layout plank flooring in a similar manner to tile flooring. Establish centre of room and adjust layout to ensure that no plank sections at perimeter of room will be less than 150mm in length. Stagger planks for a random appearance, while ensuring joints are offset at least 150mm from adjacent joints.

.6 Cut flooring around excessively heavy or fixed objects. Lay tile so that it is flush with adjacent floor surfaces.

.7 Roll tile with 68 kg roller immediately after laying. In areas inaccessible to large roller, use a small hand roller.

.8 Install metal edge strips at unprotected edges of resilient flooring.

3.5 **APPLICATION - COVE BASE**

.1 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.

.2 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.

.3 For right angled external corners use preformed matching cove corner units. Make end joints flush with gap.

.4 At wall ends and openings where ends of preformed corners come close together or touch or overlap, cut each corner unit equally so that a neat, inconspicuous joint is formed in middle of wall end or opening or so that filled gap, if gap is necessary, is not less than 38mm wide and located in middle of wall or end of opening.

3.6 **CLEANING**

.1 Remove surplus adhesive from face of tiles as work progresses.

.2 Upon completion of work remove all markings and heel scuffs. Broom clean.

.3 Prior to occupation by Owner, broom clean all resilient floors and remove all noticeable stains and marks.

.4 All wet mopping and waxing will be done by the school custodial staff.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 RELATED WORK SPECIFIED ELSEWHERE

| | | |
|---|---|---|
| .1 | Demolition | Section 02 40 00 |
| .2 | Concrete | Section 03 30 00 |
| .3 | Flooring Restoration | Section 09 01 61 |
| .4 | Rubber base | Section 09 65 00 |

### 1.2 SCOPE OF WORK

.1 Work includes replacement of terrazzo flooring at Corridor drain connection and at new door frame in Corridor and work includes:
- .1 inspection of surfaces and conditions
- .2 surfacing and grouting
- .3 cleaning and sealing

### 1.3 REFERENCES

.1 Do terrazzo work in accordance with 09 66 00 Terrazzo Specification Guide, produced by Terrazzo Tile and Marble Association of Canada (TTMAC).

.2 Conform to the following standards:

.1 CSA Group

| | | |
|---|---|---|
| .1 | CAN/CSA-A3000 | Cementitious materials compendium |
| .2 | CSA A194.1 | Terrazzo Aggregate |

.2 Canadian General Standards Boards (CGSB)

| | | |
|---|---|---|
| .1 | CAN/CGSB-51.34 | Vapour Barrier, Polyethylene Sheet for Use in Building Construction |
| .2 | CAN/CGSB-25.20 | Surface Sealer For Floors |
| .3 | CAN/CGSB-2.107 | General Purpose Built Liquid Detergent |
| .4 | CAN/CGSB-25.21 | Detergent Resistant Floor Polish |

.3 ASTM International

| | | |
|---|---|---|
| .1 | ASTM C33/C33M | Standard Specification for Concrete Aggregates |
| .2 | ASTM C-144 | Standard Specification for Aggregate for Masonry Mortar |
| .3 | ASTM C150/C150M | Standard Specification for Portland Cement |
| .4 | ASTM A821/A821M | Standard Specification for Steel Wire, Hand Drawn for Prestressed Concrete Tanks |
| .5 | ASTM A1064/A1064M | Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete |

### 1.4 QUALITY ASSURANCE

.1 Installer shall be a member in good standing of the TTMAC, with a minimum of 5 years experience in similar work. Installer must employ skilled mechanics trained and experienced in terrazzo work.

.2 Supplier shall be a member in good standing of the TTMAC, providing materials which meet the minimum standards of the TTMAC.

1.5 **SUBMITTALS**

.1 Submit three (3) samples 152mm x 152mm of each colour and type of terrazzo for approval by the Consultant. Submit samples (305mm in length) of all specified divider strips and control joints.

.2 Show shop drawings showing locations of all joints. Provide details where new terrazzo flooring meets existing, and where it meets other floor finishes. Indicate depth of and area of depressed concrete slab required. Note all colours on drawings.

.3 Submit) copies of the latest edition of the TTMAC Hard Surface Maintenance Guide, to be included in the Maintenance Manuals specified in Section 01 78 00. Include specific warnings of any practices which could damage the materials or decrease slip resistance of the surface.

1.6 **DELIVERY, STORAGE AND HANDLING**

.1 Deliver, store and handle products in a manner to avoid damage. Store materials in a clean, dry heated location furnished by others.

.2 Material must be conditioned to ambient temperatures for a period of 24 hours prior to installation.

1.7 **PROJECT CONDITIONS**

.1 Examine areas where the work of this section is to be located.

.2 Ensure that concrete slab is properly cured, is at proper level to receive terrazzo, and is clean, smooth and free of curing compounds. Slab temperature must not be less than 12°C.

.3 Do not place terrazzo until unacceptable conditions have been corrected.

.4 Protect work during installation and protect finished corners exposed to construction operations and traffic.

1.8 **WARRANTY**

.1 All terrazzo work, shall be warranted for one year from date of Substantial Performance.

**PART 2 - PRODUCTS**

2.1 **MATERIALS**

.1 Cement: Portland cement to ASTM C150M; white, with colouring to suit selected sample

.2 Sand: Clean, washed, sharp, screened sand: ASTM C-144

.3 Water: Clean water, free from oil, acids, alkali or organic matter

.4 Polyacrylate Plastic Matrix Terazzo:
.1 Liquid polyacrylate copolymer, dry coreactive and pigment.

.5 Aggregate: Marble, granite, onyx, plastic or glass chips; clean and sound; materials and colours to match existing.

.6 Colour pigments: Non fading mineral pigments, alkali-resistant

.7 Slip resistant material: No. 36 grit aluminum oxide; colour to contrast adjacent materials

.8 Slip resistant channel strips: Brass or zinc 10mm x 10mm, 20 gauge dove-tailed shaped channels with anchor tapes; colour to contrast adjacent materials

.9 Reinforcing mesh: 50 x 50mm mesh size, fabricated from 1.6mm thick galvanized wire/fabric welded mesh. ASTM A821/ASTM A185

.10 Divider Strips: 25mm to 38mm deep with anchorage devices, except where specified otherwise, 14 gauge zinc, as indicated in applicable TTMAC details. To match existing in appearance.

.11 Cleavage Plane: 4 mil thick polyethylene film, to CAN/CGSB-51.34

.12 Crack Suppression Membrane: As specified, install as per manufacturer's recommendations

.13 Epoxy bonding agent: Two part liquid epoxy resin adhesive

.14 Terrazzo Cleaner: Biodegradable and phosphate free, Ph factor between 7 and 10

.15 Sealer: Conforming to CAN/CGSB-25.20
.1 Clear, water-based acrylic, penetrating sealer specially formulated for use on terrazzo.
.2 Slip Resistant
.3 Ph factor between 7 and 10
.4 Shall not discolour over time

.16 Tactile Attention Indicator: Porcelain tactile attention indicator tile with truncated domes, as specified in Section 09 30 00.

2.2 **MIXES/PROPORTIONS - AT POURED-IN-PLACE CONCRETE**

.1 Underbed:
.1 One part Portland cement to four parts sand by volume.
.2 Wet and mix thoroughly to a low slump to provide workability. Adjust water volume depending on moisture content of sand to obtain consistency and workability.

.2 Scratch Coat:
.1 One part Portland cement, 4 parts sand and latex additive if required.
.2 Adjust water volume depending on moisture content of sand to obtain consistency and workability.

.3 Slurry Bond Coat: Mix Portland cement and water to a creamy paste consistency. Add latex additive to increase bond.

.4 Terrazzo topping to consist of 2 parts cement to three parts aggregate. Chip size ratio 70% No. 2 and 30% No. 1, unless otherwise required to match existing.

.5 Epoxy Bonded Terrazzo Topping: Same mix as standard terrazzo topping with a specified epoxy bonding agent.

.6 Colour to match existing.

.7 When mixed with water the underbed shall be of such a consistency and workability that will allow maximum compaction during tamping of the underbed, and achieve a minimum compressive strength of 15 Mpa (2000 psi) after 28 days. A stronger mix can be achieved by adding a latex additive to the water.

## PART 3 - EXECUTION

### 3.1 INSPECTION

.1 Verify existing conditions are ready to receive work.

.2 Verify that concrete has been allowed to cure for a minimum of 28 days.

.3 Verify substrate surfaces are clean, dimensionally stable, cured and free of contaminants, including sealers and curing compounds.

.4 Notify Consultant in writing of unacceptable substrate conditions. Beginning of installation implies acceptance of existing conditions.

### 3.2 PREPARATION

.1 Demolition: Chip out existing terrazzo and underbed to nearest control joint location and prepare for new terrazzo to match existing.

.2 Substrate is to be depressed to accommodate the terrazzo system, depressions from the finished floor level to be no less than 50mm for a bonded terrazzo floor.

.3 Clean concrete slab. Remove laitance by grinding or scarifying. Clean and vacuum surface. Rinse concrete surface if required with water and allow to dry thoroughly.

.4 Concrete substrate shall be sound, with steel trowel finish, free from cracks, contaminants, sealers, curing compounds, and laitance. Surface variation of concrete is not to exceed 2mm in 305mm or 6mm in 3039mm. Provide levelling coat over concrete as required to attain required level.

### 3.3 INSTALLATION - GENERAL

.1 Install terrazzo flooring in conformance with TTMAC detail 411F-2007, Portland Cement Terrazzo Floating System TTMAC detail 414F-detail B, Terrazzo Bonded to Underbed 444F-

2007, Polyacrylate Modified Cement Terrazzo Installed over Underbed and Direct Bond to Concrete Slab, Detail B. TTMAC detail 412F-2007, Portland Cement Terrazzo Epoxy Bonded to Concrete Slab, Thin-Set Method.

.2 Underbed: Install underbed over substrate and screed to required levels. The levels should allow for the thickness of the terrazzo topping in order to provide a flat and continuous transition between terrazzo and adjacent flooring. Permit underbed to cure for a minimum 48 hours prior to installation of terrazzo topping.

.3 Divider strips: Install divider strips in underbed while still in plastic state. Set strips true and level to required pattern. Terrazzo panels created by the installation of divider strips should be no greater than 1200mm in any direction. Structural or movement joints must be addressed by mechanical devices. Divider strips are not intended to replace or to be used as structural expansion joints.

.4 Provide control joints in terrazzo over cold joints in concrete slab. The divider strips required for these control joints shall be in addition to those required to replicate the pattern of the existing floor,

## 3.4 INSTALLATION OF TERRAZZO TOPPINGS

.1 Standard terrazzo topping:
- .1 Allow underbed to cure for 48 hours, sweep or vacuum underbed, saturate with water and remove excess.
- .2 Apply a cement slurry bond coat and immediately follow with application of terrazzo topping mix.
- .3 Wet terrazzo topping mixture, mix thoroughly and spread with trowel level to top of strips. Sprinkle topping with dry aggregate chips. Roll with heavy rollers to compact topping until excess cement and water has been extracted. Hand trowel topping surface flush with top of divider strips to close all voids and pin holes.
- .4 Control cure a minimum of 48 hours.
- .5 After floor has sufficiently cured, grind with No. 24 grit abrasive stones or with diamond plugs. Follow initial grind with No. 80 grit of finer stones, to a maximum of 120 grit, remove excess, rinse with clean water and apply grout by hand trowel or machine to fill all voids. Let grout cure for a minimum of 48 hours and re-grind with No. 80 grit of finer stones, to a maximum of 120 grit, until all grout is removed from surface.
- .6 Let surface dry thoroughly and apply sealer as per manufacturer's recommendations.

.2 Epoxy Bonded Terrazzo:
- .1 Clean base slab, remove laitance by shotblasting, sandblasting, grinding, or scarifying.
- .2 Clean thoroughly.
- .3 Ensure moisture content in the slab is not to exceed the manufacturer's recommendations.
- .4 Install divider strips and base bead top strips where required.
- .5 Mix and install epoxy bonding agent following the specifications of the epoxy manufacturer.
- .6 Install terrazzo topping as specified above for standard terrazzo, omitting the first two steps (water saturation of concrete slab and slurry bond coats).

.3 Aggregate chip coverage must show a density in excess of 90% exposure on the finished terrazzo surface.

3.5 **PATCHING**

.1 Remove and replace all defective or damaged work promptly and when directed by the Consultant.

3.6 **CLEANING AND SEALING**

.1 Clean and seal terrazzo in accordance with the recommendations of the latest TTMAC Hard Surface Maintenance Guide.

3.7 **PROTECTION**

.1 Standard protection includes 1 layer of Kraft paper. Contractor to provide adequate protection to completed terrazzo work. Protect work of other trades. Prohibit traffic during installation and for 48 hours after completion. Protect floor from impact and vibration for a minimum of 48 hours after installation. Protect base from impact, vibration, heave hammering on adjacent and opposite walls.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 RELATED WORK SPECIFIED ELSEWHERE

| | | |
|---|---|---|
| .1 | Cast-in-Place Concrete | Section 03 30 00 |
| .2 | Metal Fabrications | Section 05 52 00 |
| .3 | Rough Carpentry | Section 06 10 00 |
| .4 | Finish Carpentry | Section 06 20 00 |
| .5 | Hollow Metal Doors and Frames | Section 08 11 00 |
| .6 | Gypsum Board System | Section 09 29 00 |

### 1.2 SCOPE OF WORK

.1 With exceptions specified above or specifically called for in other Sections of the Specification, all paintwork is included in the scope of this Section of the Specification. Colours will be specified at a later date by the Consultant, allow for accent walls of primary colour to some areas.

.2 In locations where Drawings do not call for paint or similar finish on walls and/or ceilings, the intent of this Specification is that all items, both new work and existing surfaces in areas affected by the Work of this project, including wood and metal surfaces, normally painted or similarly finished shall be so treated.

.3 Work includes moisture testing and surface preparation of substrates as required for acceptance of paint, including cleaning, small crack repair, patching, caulking, and making good surfaces, and specific pre-treatments, sealing, and priming of surfaces.

.4 Paint all new exterior surfaces which normally require painting, including hollow metal doors, screens, soffits, roof fans and hoods, galvanized steel lintels, ladders, bollards, steel gates and hardware, metal fencing. All woodwork on exterior must be fully primed before erection or be of pressure treated wood.

.5 Perform interior painting called for in Room Schedule and Door Schedule and noted on drawings. Paint all new walls, ceilings, bulkheads, tectum, and all surfaces which normally receive a paint finish, whether noted on schedules, or not noted. Walls shall be completely painted before installation of tackboards, chalkboards, millwork, lockers, etc.

.6 All heating units, recessed convectors, grilles, pipes, access panels, hangers and miscellaneous exposed metal work (other than stainless steel, anodized aluminum and baked enamel) to be painted to match the surfaces on which they occur, unless otherwise directed by Consultant.

.7 For special painted graphics, colour changes, accent stripes, etc. see drawings.

.8 In all renovated areas, paint affected walls as specified for new construction. All other walls in the room are to be cleaned and painted with minimum one coat. If more than one colour is used in the room, confirm colours with Consultant.

.9 Paint exposed drywall and the like in locations where finish is not otherwise specified or noted. Do not paint such surfaces in mechanical shafts, unless specifically noted.

.10 Paint all exposed structural steel and mechanical ducts in finished areas.

.11 Paint exposed structure and metal deck in all mechanical and storage rooms, except Water Meter and Electrical Room.

.12 Paint pipes, conduit, ducts and related thermal insulation and all prime painted mechanical and electrical equipment and supports located in mechanical and electrical rooms and in all locations where Drawings call for paint or similar finish on walls and/or ceilings. Paint all mechanical equipment exposed on the roof. Exposed pipes shall be painted to Owner's Colour Coding/Piping schedule to suit use (i.e. hot water, etc.), included below.

.13 Paint all gas piping, inside and out, whether exposed or concealed. Do not paint other pipe, conduit, ducts, insulation and the like where concealed above ceilings or in service shafts.

.14 Make good paint finish on shop coated work where damaged.

.15 Paint visible portions of steel shelf angles, lintels and structural steel. Refer to Section 09 96 46 for intumescent paint required on some lintels and structural steel items.

.16 Paint edges and all faces of metal doors.

.17 Paint entirely, including all top and bottom edges, of all wood doors.

.18 Interior of ducts and diffusers visible from exterior on room side.

.19 Painting, as referred to herein shall include paint, enamel, stain, varnish and other finishes herein specified and normally applied to the various materials by the painting Subcontractor.

## 1.3 REFERENCE STANDARDS

.1 Do painting and finishing work to CAN/CGSB-85-GP series standards including Appendix A and to material manufacturer's instructions and to the most recent edition of the Master Painters Institute (MPI) Architectural Painting Specification Manual and Maintenance Repainting Manual. The most stringent standards shall apply.

## 1.4 QUALITY ASSURANCE

.1 The Painting Subcontractor must be a member in good standing of the Ontario Painting Contractors' Association.

.2 Painting Subcontractor shall have a minimum of five (5) years documented successful experience with projects of a similar type and scope. When requested to do so by the Consultant, provide references confirming satisfactory performance of work on such projects.

.3 Painting crew shall be composed of experienced, qualified journeypersons. Apprentices may undertake work only when fully supervised by senior, qualified workers.

.4 All painting and coating products shall be as listed in the current Approved Product List published by the Master Painter's Institute (MPI).

.5 Materials, surface preparation and workmanship shall conform to the latest edition of the MPI Architectural Painting Specifications Manual and Maintenance Repainting Manual.

1.5 **WORK ENVIRONMENT**

.1 Do not apply paint finish in areas where dust is being generated.

.2 Maintain environmental conditions within limits recommended by manufacturer, for optimum results. Do not apply coatings under environmental conditions outside manufacturer's absolute limits.

.3 Conform to requirements of MPI Architectural Specification Manual including recommendations for surface preparation.

1.6 **ACCEPTANCE OF WORK IN PLACE**

.1 Submit written confirmation of acceptance of existing conditions, to the Consultant, prior to commencing painting work. Painting may not commence without submission of this confirmation.

.2 Receipt of this confirmation will be considered a prerequisite for certification of payment for this work.

.3 Notify the Consultant, in writing, immediately if any existing condition is encountered that will prevent the attainment of satisfactory results in this work

1.7 **SUBMITTALS**

.1 Submit a copy of the maintenance bond which will be provided, together with written confirmation of the Subcontractor’s ability to provide such bond, at the time of tender.

.2 Samples:
- .1 Submit triplicate samples consisting of 300mm x 200mm panels of each type of paint finish specified.
- .2 Panels shall be of same material as that on which sample coatings are to be applied in the field where possible.
- .3 Identify each sample as to job, name of paint manufacturer, finish, colour, name and number, sheen and gloss units and name of Contractor.
- .4 Retain one set of approved samples on site until completion of the Work.

.3 Submit manufacturer’s data sheets for each paint product, including:
- .1 Product characteristics
- .2 Surface preparation instructions and recommendations
- .3 Primer requirements and finish specifications
- .4 Storage and handling recommendations
- .5 Application methods
- .6 Cautions
- .7 VOC data

.4 Submit written confirmation of acceptance of existing conditions, as specified above.

1.8 **STORAGE AND HANDLING**

.1 Store paint and painter's materials in clean, dry locations approved by the Consultant. Store materials in an area that is within the acceptable temperature range, per manufacturer's instructions. Protect from freezing.

.2 All paint shall be in unopened containers, labelled with:
- .1 manufacturer's name,
- .2 product name, product type,
- .3 instructions for surface preparation and product application,
- .4 VOC content,
- .5 environmental issues,
- .6 batch date, and
- .7 colour name and number.

.3 Provide $CO_2$ fire extinguisher minimum 9 kg capacity in paint storage area.

.4 Dispose of materials in accordance with the requirements of authorities having jurisdiction.

1.9 **SIGNS**

.1 Provide legible signs throughout the Work reading "WET PAINT" in prominent positions during painting and while paint is drying.

.2 Use 75mm high letters on white card or board.

1.10 **TEMPORARY COVERS AND PROTECTION**

.1 Protect floors and other surfaces with temporary covers such as dust sheets, polyethelene film or tarpaulins. All to Consultant's approval.

.2 Mask identification plates occurring on equipment, switch boxes, and fire rating labels, etc. which require painting.

.3 Protect, remove and replace hardware, accessories, lighting fixtures, and similar items as required except primed for paint door closers which shall be painted. Light switches and electrical communication outlet plates to be removed and reinstalled on completion of paint application.

.4 Keep oily rags, waste and other similar combustible materials in closed metal containers; take every precaution to avoid spontaneous combustion, remove waste and combustible materials daily.

.5 Clean surfaces soiled by spillage of paint, paint spattering and the like. If such cleaning operations damage the surface, repair and replace damaged work at no cost to the Owner.

1.11 **RETOUCHING**

.1 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 of other disfiguration.

.2 After fully decorating and retouching a room or other area, notify Consultant. After inspection and final approval by Consultant post sign 'DECORATING COMPLETE - NO ADMITTANCE WITHOUT PERMISSION'.

1.12 **TEST AREA**

.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, request a meeting on Site between Consultant, Contractor, and Subcontractor to review conditions, surfaces, anticipated problems and to clarify quality of workmanship acceptable to 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. Test area to be minimum standard for the Work.

.5 Failure to comply with the above will be cause for Consultant to request all Work previously painted to be repainted.

1.13 **MAINTENANCE MATERIALS**

.1 Provide one sealed can, one litre 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.

1.14 **WARRANTY/GUARANTEE**

.1 Furnish a 100% Maintenance Bond, valid for three (3) years from date of Substantial Performance, or from date of completion of Work if work is not complete at date of Substantial Performance.

.2 Subcontractor’s Maintenance Bond, shall warrant that the work has been performed in accordance with the standards and requirements of the MPI Architectural Painting Specification Manual, most recent edition.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

.1 Paint and finishing materials - highest grade, first line quality, low VOC products provided by any of the following manufacturers:
- .1 Benjamin Moore & Co.
- .2 Akzonobel Decorative Paints / Devoe High Performance Coatings
- .3 The Sherwin-Williams Company
- .4 General Paints
- .5 Sico Paints
- .6 PPG Canada
- .7 Para Paints

.2 Paints, enamels, fillers, primers, varnishes and stains shall be ready mixed products of one of the manufacturers listed. Substitutes will not be allowed. The only exception to this is where a specific product of another manufacturer is specified herein; such products shall be provided as specified.

.3 Thinners, cleaners - type and brand recommended by the paint manufacturer

.4 Only products manufactured by paint manufacturer stated at time of submission of samples will be allowed on Site unless other materials specifically specified herein. No painting to be performed until paint manufacturer identified and acceptance received from the Consultant and Inspector.

.5 Deliver materials to Site in original unbroken containers bearing brand and maker's name. The presence of any unauthorized material or containers for such, on Site shall be of sufficient cause for rejection of ALL paint materials on Site at that time, and all previous painted work repainted with proper material.

### 2.2 COLOUR SCHEDULE

.1 Consultant will provide detailed colour schedule at a later date. Conform to schedule including patterns, colours, and locations for all finishes.

.2 In each room, the Consultant may select one wall where an accent colour may be applied.

.3 Refer to room finishing notes for detailed application instructions.

2.3 **FINISHING SYSTEMS**

.1 Interior Work:

.1 Drywall:
.1 Walls:
.1 INT 9.2B High Performance Architectural Latex, semi-gloss finish
.2 1 coat Primer; MPI #50
.3 2 coats MPI #141, VOC Range E3
.2 Ceilings:
.1 INT 9.2A Latex (over latex sealer), flat finish
.2 I coat Primer; MPI #50
.3 2 coats MPI #53; VOC Range E3
.3 All drywall, whether requiring finish painting or not, must receive prime coat.

.2 Concrete Block, paint:
.1 INT 4.2D (modified), High Performance Architectural Latex, semi-gloss finish, 4 coat system
.2 2 coats latex blockfiller; MPI #4
.3 2 coats finish; MPI #141, VOC Range E3

.3 Concrete Block, glaze:
.1 INT 4.2J (modified), Epoxy-modified Latex Finish, 4 coat system
.2 2 coats latex blockfiller; MPI #4
.3 2 Coats epoxy-modified latex finish; MPI #115
.4 Provide in all hallways and washrooms, and where noted as “glazed” in Room Finish Schedule.

.4 Concrete Block, wet areas:
.1 INT 4.2G (modified), Epoxy “Tile like” Finish, 4 coat system
.2 2 coats epoxy blockfiller; MPI #116, VOC Range E3
.3 2 Coats epoxy finish; MPI #77, VOC < 250 g/L
.4 Provide in all wet areas, including washrooms and change rooms with showers.

.5 Cast in Place Concrete walls, ceilings:
.1 INT 3.1C High Performance Architectural Latex, semi-gloss finish
.2 1 coat alkali resistant primer; MPI #3
.3 2 coats HIPAC Latex finish; MPI #141, VOC Range E3

.6 Woodwork - Opaque Finish:
.1 INT 6.4S High Performance Architectural Latex, semi-gloss finish
.2 1 coat latex primer MPI #39
.3 2 coats HIPAC latex finish; MPI #141. VOC Range E3

.7 Woodwork - Stain Finish:
.1 INT 6.3E Polyurethane Varnish over Stain
.1 Wood Stain; MPI #90
.2 3 coats Polyurethane Varnish, clear gloss; MPI #86
.1 use clear satin finish at benches; MPI #85

.8 Ferrous Metal:
- .1 INT 5.1N W.B. Light Industrial Coating, semi-gloss finish
- .2 1 coat epoxy primer; MPI #101
- .3 2 coats W.B. lidght industrial coating; MPI #153

.9 Shop Primed Structural Steel and Metal Fabrications:
- .1 Confirm type of shop primer used with structural steel supplier, and use compatible system listed below.
- .2 Confirm compatibility of all coatings with manufacturers.
- .3 Touch up prime coat where damaged, with compatible primer.
- .4 INT 5.1R High Performance Architectural Latex (over Q.D. metal primer), semi-gloss finish
  - .1 1 coat Alkyd metal primer MPI #79; VOC Range E2 or E3
  - .2 2 coats HIPAC Latex; MPI #141; VOC Range E3

.10 Galvanized Metal:
- .1 Includes all hollow metal doors, frames and screens.
- .2 INT 5.3M High Performance Architectural Latex, semi-gloss finish
- .3 1 coat water based Galvanized Primer MPI #134
- .4 2 coats HIPAC Latex MPI #141; VOC Range E3

.11 Insulation on Pipes & Ducts (plastic):
- .1 INT 6.8A High Performance Architectural Latex, semi-gloss finish
- .2 1 coat Bonding Primer MPI #17
- .3 2 coats HIPAC Latex MPI #141; VOC Range E3

.12 Mechanical Equipment:
- .1 High Performance Architectural Latex, semi-gloss finish
- .2 As specified for metal types.

.13 Piping, Conduit & Ductwork (uncoated):
- .1 INT 5.3M High Performance Architectural Latex, semi-gloss finish
- .2 1 coat water based Galvanized Primer MPI #134
- .3 2 coats HIPAC Latex MPI #141; VOC Range E3

.14 Surfaces behind grilles, within 30mm of grille:
- .1 INT 5.3N Institutional Low Odour/ Low VOC, flat finish
- .2 1 coat galvanized Primer MPI #134
- .3 2 Coats Acrylic Flat, Black; MPI #143

.15 Concrete Floors:
- .1 1 Coat Water-Borne Epoxy (diluted 10-20% with water) MPI #115
- .2 2 Coats Water-Borne Epoxy MPI #115
- .3 VOC emissions of coating not to exceed 200 g/l.

.16 NOTE: Use heat resistant paint where required.

.2 Exterior Work

.1 Stucco, cementitious panels:
.1 1 Coat Exterior Water Based, Alkali Resistant Acrylic Primer MPI #3
.2 2 Coats Exterior Acrylic Latex MPI #214, satin finish

.2 Galvanized Steel:
.1 EXT 5.3G W.B Light Industrial Coating over cementitious primer
.2 Touch-up welds and any repairs with 1 coat Acrylic Primer MPI #134
.3 1 coat Cementitious Primer MPI #26
.4 2 Coats Exterior W.B Light Industrial Coating MPI #163, semi-gloss

.3 Ferrous Metals, Structural Steel:
.1 EXT 5.1M W.B. Light Industrial Coating over rust inhibitive primer
.2 1 coat Rust Inhibitive Primer MPI #107
.3 2 Coats Water Based Light Industrial Coating MPI #163, semi gloss

.4 NOTE: Touch up shop primer and field welds using zinc rich primer.

.5 Wood:
.1 EXT 6.2D Solid Colour Stain
.2 1 Coat Exterior Alkyd Primer MPI #5
.3 2 Coats Exterior Solid Colour Stain MPI #14

.6 For painted markings on asphalt paving refer to Section 32 17 23.

## PART 3 - EXECUTION

### 3.1 PREPARATION OF SURFACES

.1 Prepare surfaces in accordance with the following standards and to MPI Architectural Specification Manual Chapters 2 and 3; the most stringent requirements shall apply.

.1 Prepare wood surfaces to CGSB 85-GP-IM. Use CAN/CGSB 1.126 vinyl sealer over knots and resinous areas. Use CGSB 1-GP -103M wood paste filler for nail holes. Tint filler to match.

.2 Touch up damaged spots of shop paint primer on steel with CAN/CGSB 1.40M to CGSB 85-GP-14M.

.3 Prepare galvanized steel and zinc coated surfaces to CGSB 85-GP-16M. This includes wiped coated steel surfaces.

.4 Prepare masonry and concrete surfaces to CGSB 85-GP-31M.

.5 Test coat concrete surfaces to ensure adhesion of primer prior to proceeding with painting. If concrete contains fly ash, a solvent based primer will be required.

.6 Prepare wallboard surfaces to CGSB 85-GP-33M. Fill minor cracks with plaster patching compound for stained woodwork.

.7 Prepare concrete floors to CGSB 85-GP-32M.

.8 Prepare copper piping and accessories to CGSB 85-GP-20M.

.9 Apply prime coat on wood scheduled for paint finish before installation.

.10 Back prime wood scheduled for transparent finish. Do not prime surfaces scheduled for transparent finish.

.11 Coat test areas to confirm adhesion of all coatings over pipe insulations and plastics prior to proceeding with painting.

.12 Remove all surface contamination such as oil, grease, loose paint, mill scale, dirt, foreign matter, rust, mould, mildew, mortar, efflorescence, and sealers from existing surfaces to assure sound bonding to tightly adhering old paint.

.13 Scape peeling paint off existing masonry surfaces and apply a compatible masonry sealer, approved for use by the paint manufacturer, before applying new coatings.

.14 Glossy surfaces must be clean and dull before repainting. Wash with abrasive cleanser, or, wash thoroughly and dull by sanding.

.15 Spot prime any existing bare areas with an appropriate primer.

.16 NOTE: ABOVE NOTED SURFACES MAY NOT ALL BE APPLICABLE TO THIS PROJECT.

3.2 **RECOATABILITY TESTING**

.1 Perform at least ten (10) reocoatability tests at existing surfaces to be repainted as outlined below.

.2 Testing of interior surfaces must be performed in the presence of the Consultant; arrange to conduct testing before or after scheduled site meetings.

.3 Check for compatibility between existing and new coatings by applying a test patch of the recommended coating system, covering at least 2 to 3 square feet. Allow surface to dry one week before testing adhesion per ASTM D3359. If the coating system is incompatible, complete removal is required.

.4 Clean and prepare test areas of the surface to be repainted. Areas selected shall be areas of the surfaces most vulnerable to weathering and/or wearing.

.5 Repeat the recoatability testing until satisfactory results are obtained.

3.3 **APPLICATION**

.1 Apply coatings in accordance with manufacturer's printed instructions.

.2 Use suitable, clean equipment in good condition.

.3 Maintain dust-free suitable conditions on the surfaces free from machine, tool or sandpaper marks, insects, grease, or any other condition liable to impair finished work to prevent production or good results.

.4 Apply evenly, uniform in sheen, colour and texture, free from brush or roller marks, well brushed or rolled in and free of crawls, runs, join marks or other defects.

.5 Permit paint to dry between coats. Touch up uneven spots after applying first coat. Tint various coats of multiple coat work in light shades of the final colour selected, to distinguish between coats.

.6 Give Consultant due notice and sufficient opportunity (minimum 48 hours) to inspect each coat. Do not proceed with subsequent coat until preceding coat approved. Consultant reserves the right to order complete retreatment if this condition is not observed.

.7 At concrete block, two coats of block filler are required to achieve smooth and uniform surface on block.

.8 Painting coats are intended to cover surfaces perfectly; if in painter's opinion, formula specified is inadequate to provide a first class finished surface, report to the Consultant and have formulas rectified before commencing work. Surfaces imperfectly covered shall receive additional coats at no additional cost. Provide an additional coat wherever dark colours are used.

.9 Use paint unadulterated. Use same brand of paint for primer, intermediate and finish coats. Factory mix all paints.

.10 Paint finish shall be applied by roller except in the case of wood trim, door frames, base board and similar work of small surface area which shall be painted by brush. Do not use roller for applying finish other than paint.

.11 Spray painting will not be permitted 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 Trades, 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 Consultant.

.12 Paint entire surfaces, including areas where millwork or other items are to be installed.

.13 Finish edges of doors with paint or stain treatment as required to match face of door. Seal hidden edges of wood doors with one coat of shellac and one coat gloss varnish or two coats paint. Repaint tops and edges of wood doors after fitting.

.14 Even up stained woodwork in colour as required by nature of wood and as directed by Consultant. Apply same finish on trim, fitments cupboards and other protecting ledges as on surrounding work, disregard sight lines.

.15 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.

.16 After first coat, fill nail holes, splits and scratches, using putty coloured to match finish.

.17 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.

.18 Clean castings with wire brush before application of first paint coat.

.19 Do not etch galvanized metal. Use zinc rich primer. This includes metal door frames and the like with wiped zinc coating.

.20 Note that primer is required on all hollow metal doors, frames and screens. Three coat system is required. Sand between all coats.

.21 Remove form oil or parting compounds from concrete surfaces. Use Xylol or approved compound.

.22 Paint interior of pipe spaces, ducts, etc. visible through grilles or through linear metal ceilings in black matt finish.

.23 Conform with Consultant's colour schedule and exactly match approved samples.

.24 Mechanical and Electrical Pipes, Ducts and Conduits:

.1 Commence Work when piping installation is complete in the area concerned.

.2 Do not paint plated or other prefinished surfaces, unless otherwise noted.

.3 Paint conduit in same colour as background paint.

.4 Apply formulae specified even though surface prime painted at shop prior to delivery. Touch up shop priming where damaged.

.5 Use heat resistant epoxy paint on pipes and surfaces where operating surface temperature exceeds 65 degrees C.

.6 Paint exposed pipes and ducts and their supports and related items in colours to suit colour coding included below; confirm with Consultant. Refer to mechanical specifications for further instructions.

3.4 **REPAIRS**

.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 1m.

.2 If patch painting is not acceptable, repaint entire wall, or ceiling.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 RELATED WORK SPECIFIED ELSEWHERE

.1 Rough Carpentry Section 06 10 00

.2 Casework Section 06 41 13

### 1.2 SUBMITTALS

.1 Submit Shop Drawings in accordance with Section 01 33 23. Indicate field dimensions on shop drawings.

.2 Shop drawings to show sizes, types, layouts, and installation details.

.3 Submit samples of visual display boards as requested by the Consultant.

.4 Include copies of trade literature, outlining the care and maintenance of the installation, in Maintenance Manual.

### 1.3 STORAGE

.1 Deliver units fully assembled to the maximum extent practical.

.2 Store all materials within the building in clean, dry area, and in accordance with manufacturer's recommendations.

.3 Store material in manner which will not damage, mark or cause other defects detrimental to the finished appearance. Provide such protection as necessary to guard against damage and marring from this and other trades. Maintain such protection until ordered removed by the Consultant.

### 1.4 WARRANTY

.1 Extend the Warranty period stipulated in the General Conditions of the Contract to two (2) years.

.2 Writing boards shall carry a 25 year warranty against defects appearing under regular classroom usage and wear. All Warranties to be given in writing.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

.1 Materials listed herein are as manufactured by Architectural School Products. Equivalent products as supplied by Global School Products Inc. & Martack Specialties Ltd. are acceptable.

.2 Chalkboards, markerboards and tackboards are to be of sizes indicated on drawings. All writing boards are to be white markerboards, unless specifically noted otherwise.

.3 Standard Aluminum Trim to be Series 200, as follows:

| | | |
|---|---|---|
| .1 | Perimeter Trim: | No.205 |
| .2 | Map Rail with Cork Insert: | No.206 |
| .3 | Dividerstrip: | No.207 |
| .4 | Chalk tray: | No. 212, complete with end pieces |
| .5 | Chalk tray over millwork: | No. 264, where mounted on or directly above millwork |
| .6 | Chalk tray in Gym: | No. 461 non projecting |

.4 All exposed aluminum to have clear anodized satin finish.

.5 Furnish map rails, where shown, complete with hooks at the rate of two hooks every 1200mm. of rail.

.6 Chalkboards: "Vit-rite" 12mm thickness composed of porcelain enamel surface fused under high heat to a high quality enamelling steel surface face sheet with 11mm impregnated tentest core with balancing zinc coated steel back-up sheet. Colour - Black. Provide Black Board in Dramatic Arts 112.

.7 Markerboards: White “Rite On, Wipe Off” porcelain enamel writing board for markers. Construction as for chalkboards.
Provide lined boards for music scale in Music Rooms 108 and 110.

.8 Joints to be absolutely flush and level, plumb and true with edges finished square and fitted as closely as possible. Use concealed joint fasteners.

.9 Tackboards: 12.7mm thick A.S.P. Prelaminated tackboards, consisting of 6.35mm natural cork laminated to 6.35mm hardboard backing, to sizes as shown on Drawings.

.10 Mounting heights of chalkboard, or markerboard, and chalk rail and tackboards shall be as directed by Consultant, or as indicated on drawings.

.11 Provide additional units as noted in Part 3, below.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

.1 Supply all labour, materials, anchors, fasteners necessary to complete the installation of chalkboards, whiteboards, and tackboards throughout the project. All installations to be done by tradesmen experienced in this type of work.

.2 Erect all units plumb, level and accurately in locations shown on the Drawings or as directed by Consultant. Securely and permanently fix to the wall surfaces with concealed fasteners.

.3 The whiteboard at the centre of the teaching wall in each classroom is to be trimmed independently from adjacent boards. It shall be securely fixed to the wall surface with concealed fasteners, but shall be removable, without damage, for future relocation.

.4 Include for extended aluminum jambs, trim, track and chalktrays and accommodate all other special conditions as required.

.5 Accurately cut, machine and fit to form tight flush hairline connections all joints in trim and rails. Corners of trim to be square and true and mitre cut. Cap ends of rails with cast aluminum end fittings.

.6 Joints in chalkboards and markerboards to be tight hairline flush butt joints properly alligned by means of a continuous 14 ga galvanized steel spline let into edges.

.7 Adjust all operation hardware for smooth, trouble free operation.

.8 Do not install finished materials until overhead work such as acoustic ceiling, electrical, mechanical and painting have been completed.

.9 In addition to items indicated on drawings, supply and install, where directed by Owner, additional display boards as follows:
.1 Two 1200 x 1200 tackboards.

3.2 **CLEANING**

.1 Leave trim and board surfaces clean and free of stains or marks and completely cover all chalkboards markerboards and tackboards with "Pliofilm" immediately after installation. Remove cover at time of occupancy.

**END OF SECTION**

## PART 1 - GENERAL

### 1.1 RELATED WORK

.1 Masonry Walls — Section 04 22 00

### 1.2 SUBMITTALS

.1 Submit samples of all accessories for approval by the Consultant, in accordance with Section 01 33 23.

### 1.3 DELIVERY, STORAGE AND HANDLING

.1 Package accessories and label with description of contents and installation location. Each accessory to be individually wrapped complete with all fixings as required.

### 1.4 MAINTENANCE AND OPERATING INSTRUCTIONS

.1 Provide in Maintenance Manual, three (3) printed copies of maintenance and operating instructions of all accessories.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

.1 Stainless Steel: Type 302 with #4 finish 0.76 ga unless otherwise noted.

.2 Steel: in accordance with CAN/CSA G40.21 Grade 300W.

.3 Welding Materials: in accordance with CSA W59.

.4 Hot dipped Galvanizing: to conform to CSA-G164.

### 2.2 KEYING

.1 All accessories to be keyed alike. Provide six keys.

### 2.3 TRADEMARKS AND LABELS

.1 Trademarks and labels shall not be visible in the finish exposed surfaces.

### 2.4 MANUFACTURER

.1 Specified manufacturer's catalogue references establish minimum acceptable standards for Work of this Section. Products shall be as manufactured by Frost Products Ltd., Watrous Inc., Bobrick Washroom Equipment Ltd., or Bradley Corp., unless noted otherwise.

.2 All items to be from one manufacturer.

2.5 **ACCESSORIES**

.1 Paper towel dispensers will be "Single Fold, white enamel with keyed lock", similar to Code 101 - 1 by Architectural School Products (ASP). Heights of paper towel dispensers will be adjusted to barrier free heights.
.1 Location: one above each sink.

.2 Mirrors:

.1 Standard Mirror:
.1 Type 1: 460 x 914mm, with tamper resistant mounting; Frost 941-1836, Watrous/ASI 0620, Bradley 781-18x36 or Bobrick B-165-1836.

2.6 **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 2 mm 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 **LOCATIONS**

.1 Washroom accessories to be installed as noted on drawings.

3.2 **INSTALLATION**

.1 Securely fasten accessories level and plumb in the locations shown on the Drawings and as specified herein. Mounting heights as shown on Drawings, or as directed by Consultant.

.2 Install accessories for barrier-free facilities in accordance with the barrier-free provisions of the Ontario Building Code.

.3 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.

.4 Perform drilling of steel, masonry and concrete necessary to install the accessories.

.5 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.

.6 Clean all accessories in conformance with Section 01 74 00.

**END OF SECTION**