

# PROJECT MANUAL FOR SLCD-SAC

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Prepared by: Scott Barker OAA / Scott Barker Architect

Prepared for: St Lawrence Co-operative Daycare

Issued for: BID

Divisions 00 - 12

## **PART 1 PROJECT TEAM**

### **1.1 THE OWNER**

1.1.1 St Lawrence Co-operative Daycare  
4 Market St.  
Toronto, ON M5E 1M6

Web: <https://stlawrencedaycare.com/>

### **1.2 THE CONSULTANT**

1.2.1 Scott Barker OAA / Scott Barker Architect  
1249 Dundas St W,  
Toronto, ON M6J1X6

Web: <http://scottbarker.ca/>

### **1.3 STRUCTURAL CONSULTANT**

1.3.1 Contact Structural Engineering Inc.  
675 King St W,  
Toronto ON M5V 1M9

Web: <https://www.contactengineering.ca/>

### **1.4 MECHANICAL CONSULTANT**

1.4.1 MSH Engineers Inc.  
160 Mediterra Dr,  
Woodbridge ON L4H 0W8

Web: <https://msheng.ca/>

### **1.5 ELECTRICAL CONSULTANT**

1.5.1 MSH Engineers Inc.  
160 Mediterra Dr,  
Woodbridge ON L4H 0W8

Web: <https://msheng.ca/>

END OF SECTION

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**DESIGN DISCIPLINE AND ISSUING AUTHORITY (IA)**

DOCUMENTS HAVE BEEN PREPARED AND ISSUED BY EACH ISSUING AUTHORITY AS FOLLOWS:  
ARCHITECT (A), PROFESSIONAL ENGINEER – STRUCTURAL (S), PROFESSIONAL  
ENGINEER – MECHANICAL (M), PROFESSIONAL ENGINEER – ELECTRICAL (E), DATA  
AND COMMUNICATIONS CONSULTANT (IT), VERTICAL TRANSPORTATION (VT),  
LANDSCAPE ARCHITECT (L), HARDWARE (H).

## 1.1 BID CALL

- 1.1.1 Bids will be received before 04:00:00 PM local time on **Thursday August 8<sup>th</sup>, 2024** (the “Bid closing time”) via email at [flacaria@stlawrencedaycare.com](mailto:flacaria@stlawrencedaycare.com)
- 1.1.2 For the purposes of this Bid process, the Owner and the Procurement Authority is identified as follows:  
  
St Lawrence Co-Operative Daycare  
230 The Esplanade., Toronto, ON M5E 1M6
- 1.1.3 The official Bid closing time will be determined by the timestamp as recorded by the Procurement Authority’s email server.
- 1.1.4 Bids received after the specified Bid closing time will be marked as late and will not be considered. The Owner reserves the right to extend the Bid closing time or cancel the Bid call by addendum.
- 1.1.5 This Bid call is by invitation only. Submit bids only in the name indicated in the letter of invitation to Bid. Bids submitted in a name different to that indicated in the invitation, or from Bidders not invited to Bid, will not be considered.
- 1.1.6 Bids will be opened in private.

## 1.2 COMPLIANCE

- 1.2.1 The bidder acknowledges that by submitting a compliant Bid, it has accepted an offer by the Owner to enter into a “Bid Contract” for the evaluation of bids and the award of the Contract, if an award is made. The bidder acknowledges that the terms of the “Bid Contract” are represented by the Bid Documents.
- 1.2.2 A Bid which fails to comply with the requirements of these Instructions to Bidders may cause a Bid to be declared non-compliant.

## 1.3 DESCRIPTION

- 1.3.1 The Owner intends to solicit bids to obtain an offer to perform Work to complete a Project located for a CCDC2, 2020 Contract, in accordance with the Contract Documents.
- 1.3.2 The Project’s description is generally as follows:
  - 1.3.2.1 Interior alterations to an existing daycare will be conducted in two phases. The first phase will cover approximately 217 square meters, and the second phase will cover approximately 245 square meters.

## 1.4 PLACE OF THE WORK

- 1.4.1 The Place of the Work is located at:  
230 The Esplanade, Toronto (Convenience Address) (246 The Esplanade)  
Toronto, ON

M5A 4J6

## 1.5 BID DOCUMENT AVAILABILITY

1.5.1 Bid Documents are made available in electronic format and emailed to bidders for the purpose of obtaining bids for this Project. It does not confer a license to use the Bid Documents for any other purpose.

1.5.2 Printing of hard copy sets of Bid Documents will be at Bidder's expense.

## 1.6 EXAMINATION OF BID DOCUMENTS

1.6.1 Examine the Bid Documents and promptly notify the person designated to receive inquiries of any perceived errors, omissions, conflicts or discrepancies in the Bid Documents.

## 1.7 SITE EXAMINATION

1.7.1 Bidders shall visit the site and familiarize themselves with conditions affecting the Work before submitting a Bid.

1.7.2 Bidders' only opportunity to visit the Place of the Work will be in conjunction with the specified pre-Bid meeting and site visit.

1.7.3 Refer to 00 31 00 - Available Project Information which identifies available information pertaining to the Project.

1.7.4 By inference of the "Concealed or Unknown Conditions" GC in the General Conditions of the Contract, Bidders shall include in their Bid price for non-concealed and known conditions that are either visible or can be reasonably inferred from a site examination at the Place of the Work before Bid submission.

## 1.8 SPECIAL REQUIREMENTS IN PLACE AT OWNER'S FACILITY

1.8.1 Bidders visiting the Place of the Work shall be accompanied at all times by a representative of the Owner and shall comply with Owner's policies in place at the Place of the Work.

## 1.9 INFORMATION MADE AVAILABLE TO BIDDERS

1.9.1 Refer to Document 00 30 for Reports and other documents prepared or obtained with respect to the Place of the Work.

1.9.2 Designated Substances:

1.9.2.1 The term "Designated Substances" has the meaning given in the Occupational Health and Safety Act (Ontario) ("OHSA ") and includes without limitations materials such as lead, mercury, silica, asbestos containing materials ("ACM"), benzene, arsenic, and similar substances.

1.9.2.2 If applicable, a list and/or report indicating the condition and location of any Designated Substances, present at the Place of the Work, will be provided to Bidders by the Owner and/or the Consultant.

- 1.9.2.3 Unless The Work of the Contract is intended to handle or handle and remove Designated Substances, in carrying out The Work under the Contract, Bidders shall ensure they do not handle, deal with, disturb or remove any Designated Substance identified in the list or indicated in the report.
- 1.9.2.4 Should a Bidder determine, prior to Bid Closing, that The Work cannot be completed without handling, dealing with, disturbing or removing any Designated Substance identified in either the list or the report, 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 Addenda.

#### **1.10 PRE-BID MEETING AND SITE VISIT**

- 1.10.1 A pre-Bid meeting and site visit at the Place of the Work has been scheduled for 1:00:00-9:30:00 AM PM local time on Monday July 22<sup>nd</sup>, 2024 Attendees shall meet at the following location: 230 The Esplanade – SCLD School-Age Centre
- 1.10.2 Attendance by prime Contract Bidders is mandatory
- 1.10.3 Bidders may be required to sign an attendance sheet during the meeting. Failure of a Bidder's representative to attend and sign the attendance sheet will cause the Bid to be rejected as non-compliant.
- 1.10.4 Issues arising from the pre-Bid meeting and site visit will be addressed as required in an addendum to the Bid Documents. No meeting minutes will be issued. Bidders may not rely upon any information given verbally or otherwise at the pre-Bid meeting and site visit that is not confirmed by addendum.

#### **1.11 BID FORM SUPPLEMENTS**

- 1.11.1 Submit the following Bid Form Supplements together with the Bid Form:
  - 1.11.1.1 Contract security (Consent of Surety) as specified.
  - 1.11.1.2 Section 00 43 00 - Bid Form Supplements.
  - 1.11.1.3 A realistic, preliminary GANTT chart, of size required to display entire schedule for entire construction period, but not less than tabloid size (11 inch x 17 inch).
- 1.11.2 The Owner may, after the Bid closing time and before Contract award, require any Bidder to submit additional supplementary information about any aspect of the Bidder's Bid to verify compliance with the Bid Documents.

#### **1.12 BONDING CONTRACT SECURITY (CONSENT OF SURETY)**

- 1.12.1 Submit with the Bid an agreement to bond issued by the same surety company that provides the Bid bond, undertaking to provide a fifty percent (50%) performance bond and a fifty percent (50%) labour and material payment bond, both to be delivered to the Owner if the bidder is awarded the Contract.
- 1.12.2 Refer to Section 00 73 63 for additional requirements.



### 1.13 MANDATED SUBCONTRACTORS

1.13.1 The Owner mandates the following Subcontractors. Only the named Subcontractors may perform the Work they are designated to perform and shall be carried in the Bidder's Bid:

1.13.1.1 Micheal Murphy for City of Toronto Community Centre – Facilities Supervisor

.1 416.508.9633

.2 michael.murphy@toronto.ca

1.13.1.2 Jeremy Sokalsky for City of Toronto Community Centre – Maintenance Lead

.1 416.392.1347

1.13.1.3 Melody Arnold for Berkeley Castle (Parking Garage)

.1 416.366.3704

1.13.2 Include in Bid price all taxes and customs duties in effect at the time of the Bid closing, except for Value Added Taxes as defined in the CCDC standard form of Contract.

### 1.14 CONTRACT TIME

1.14.1 State in the Bid Form the time required to attain Substantial Performance of the Work and Ready for Takeover. This will not be considered in Bid evaluation but will become the Contract Time under the Contract.

### 1.15 SUBSTITUTIONS

1.15.1 No Substitutions During Bidding Permitted Where the Bid Documents specify particular Products by proprietary name, Bidders shall base their bids on the named Products only. The Consultant will not consider requests for approval of substitutions during the Bid period. Refer to Section 01 25 00 – Substitution Procedures for substitutions after Contract award.

### 1.16 ALTERNATIVES

1.16.1 Provide requested alternatives by completing and submitting Section 00 43 – Bid Form Supplements – Alternative Prices.

1.16.2 Do not submit unsolicited alternatives.

1.16.3 The Owner will determine before Contract award which alternatives will be accepted or not accepted. Each Bidder's alternative prices for all accepted alternatives will be used to adjust that Bidder's base Bid price and the lowest compliant Bidder will be determined based on the adjusted base Bid price.

1.16.4 The Owner may select any, all, or none of the specified alternatives, at the Owner's sole discretion.

### 1.17 LIST OF SUBCONTRACTORS

1.17.1 Complete and submit Section 00 43 00 – Bid Form Supplements – List of Subcontractors, indicating those Subcontractors or Suppliers whose bids have

been received by the Bidder, which names the Bidder would be prepared to accept for the performance of the Work indicated.

- 1.17.2 The purpose of this requirement is to protect the interests of subcontract bidders and the integrity of the bidding process. Provided the List of Subcontractors has been properly completed and submitted, the information will not be used in evaluating the Bids to determine the lowest compliant bidder.

## 1.18 UNIT PRICES

- 1.18.1 Where required by the Bid Documents, a Bidder shall submit a Supplementary Bid Form – Unit Prices.
- 1.18.2 Unit prices shall be in effect for the duration of the Contract and may be used to calculate the cost of additional Work under the Contract.
- 1.18.3 The Owner reserves the right to accept or reject any or all unit prices submitted, and such prices shall remain in effect for the duration of the Contract. Failure to submit a unit price where required may result in the Bid being declared non-compliant.

## 1.19 PRELIMINARY SCHEDULE

- 1.19.1 Submit with Bid, a realistic, preliminary GANTT chart, of size required to display entire schedule for entire construction period, but not less than tabloid size (11 inch x 17 inch).
- 1.19.2 Time Frame: Extend schedule from date assumed for the Notice of Award to date of Substantial Performance of the Work and Ready-for-Takeover.
- 1.19.2.1 Activities: Treat each major portion of The Work or separate area as a separate numbered activity for each main element of the Work.
- 1.19.2.2 Submittal Review Time: Include review and resubmittal times indicated in Section 01 33 00 in schedule. Coordinate submittal review times in Contractor's construction schedule with submittal schedule.
- 1.19.2.3 Substantial Performance of the Work and Ready for Takeover: Indicate completion in advance of date established for Substantial Performance of the Work and Ready for Takeover, and allow time for Consultant's procedures necessary for certification.
- 1.19.2.4 Deficiency List: Include not more than 30 days for completion of deficiency list items and final completion.
- 1.19.2.5 Constraints: Include constraints and Work restrictions indicated in the Contract Documents schedule, and show how the sequence of the Work is affected.
- 1.19.2.6 Work Restrictions: Show the effect of Owner's Work hours and constraints on schedule:
- .1 Phases: Indicate important phases of construction for each major portion of the Work.
  - .2 Construction Areas: Identify each major area of construction for each major portion of the Work.

- 1.19.2.7 Milestones: Include milestones, including, but not limited to, the Contract Award, Substantial Performance of the Work, and Ready-for-Takeover.

## 1.20 BID FORM SIGNING

1.20.1 Complete the Bid Form as follows:

- 1.20.1.1 Incorporated Company: Provide company name and name and signature of the duly authorized signing representative(s). Insert under each signature the representative's capacity to act on behalf of the company.
- 1.20.1.2 Joint Venture: Each entity within the joint venture shall execute the Bid Form as specified.
- 1.20.1.3 Partnership: Provide name of partnership and name and signature of duly authorized representatives of the partnership.
- 1.20.1.4 Sole Proprietorship: Provide name of sole proprietorship and name and signature of sole proprietor in the presence of a witness who shall also sign.

## 1.21 BID SUBMISSION

- 1.21.1 Bids will be received in electronic form (in .pdf format) by email only. Submit Bid at the email address indicated in Article 1.1 "Bid Call" with the following information in the subject line: "BID SUBMISSION FOR SLCD RENOVATIONS (PHASE 1 & PHASE 2) – [CONTRACTOR NAME]"
- 1.21.2 Verbal, telephoned, fax, e-mail, or text message bids will not be accepted nor acknowledged.

## 1.22 BID MODIFICATION AND WITHDRAWAL

- 1.22.1 A Bid, including the Bid Form and Bid Form supplements, submitted in accordance with these bidding requirements may be modified or withdrawn, provided the modification or withdrawal request:
  - 1.22.1.1 is in the form of an email received at the address specified in "Bid Submission" article before the Bid closing time, and
  - 1.22.1.2 states the Project title, name of the Bidder, the nature of the modification or withdrawal request,
  - 1.22.1.3 and is signed by a duly authorized person.
- 1.22.2 For Bid closing time purposes, the official time of receipt of emailed Bid modifications or withdrawal requests will be the time of receipt on the receiver's email server.
- 1.22.3 If a Bid is withdrawn, a new Bid may be submitted in accordance with the specified requirements, provided it is received before the Bid closing time.
- 1.22.4 When submitting a modification directing a change in a Bid price, do not reveal the original amount nor the revised amount:
  - 1.22.4.1 On stipulated price bids, state only the amount to be added to or deducted from the original Bid price.

- 1.22.4.2 On unit price bids, state only the amount to be added to or deducted from each original unit price or lump sum in the Schedule of Prices. The Owner will adjust extended amounts and the total Bid price as required by the modification.
- 1.22.5 When submitting a second or more modifications related to a particular Bid price, ensure that there is no ambiguity as to the intended Bid price.
- 1.22.6 State all addendum numbers received, if different from what was indicated on originally submitted Bid Form.
- 1.22.7 The Owner will assume no responsibility or liability for modifications or withdrawals that are, for any reason, delayed, illegible, unclear as to intent, ambiguous, contrary to these instructions, or otherwise improperly received. The Owner may disregard improperly received modifications or withdrawals.

### **1.23 BIDDING IRREGULARITIES**

- 1.23.1 Bids with Bid Forms or required Bid Form Supplements that are improperly prepared, signed or submitted contrary to these Instructions to Bidders, or that contain added conditions or other irregularities of any kind, may, at the Owner's discretion, be rejected as non-compliant.
- 1.23.2 The Owner may accept or waive a minor and inconsequential irregularity. The determination of what is, or is not, a minor and inconsequential irregularity, the determination of whether or not to accept or waive such an irregularity, and the final determination of whether the Bid is compliant, will be at the Owner's sole discretion.
- 1.23.3 The following irregularities relate to what are considered mandatory bidding requirements. These will not be considered minor and inconsequential and will cause the Bid to be rejected as non-compliant:
  - 1.23.3.1 Bid or Bid Form Supplement is received after the specified Bid closing time.
  - 1.23.3.2 Required Bid Form or Bid Form Supplement is missing.
  - 1.23.3.3 Bid Form or Bid Form Supplement is not in the form provided or required.
  - 1.23.3.4 A Bid price is illegible, ambiguous or unclear.
  - 1.23.3.5 One or more conditions are added to or submitted with the Bid, the effect of which is a material modification of the Bid Documents.
  - 1.23.3.6 Failure to indicate in the Bid Form the addendum number(s) of all addenda received.
  - 1.23.3.7 Failure to comply with any other bidding requirement expressly characterized as mandatory in elsewhere in the Bid Documents.

### **1.24 BID ACCEPTANCE PERIOD**

- 1.24.1 Bids shall remain open to acceptance by the Owner and shall be irrevocable until expiry of the Bid acceptance period stated in the Bid Form (i.e. 60 days or until another Bidder enters into a Contract with the Owner for performance of the Work, whichever occurs first.

1.24.2 After Bid closing and before expiry of the Bid acceptance period stated in the Bid Form, the Owner may request all Bidders to agree to an extension of the originally specified Bid acceptance period. In such case the Bid acceptance period will be extended subject to the Bidder, whose Bid the Owner wishes to accept, having agreed in writing to the extension.

## **1.25 BID ACCEPTANCE**

1.25.1 The lowest or any Bid will not necessarily be accepted and the Owner may reject any and all bids.

1.25.1 The Contract will be established if and when the successful Bidder receives from the Owner a written notification accepting the Bid without any conditions. If the Owner's written notification accepting the Bid contains, or is subject to, any conditions, the Contract will be established if and when the Bidder accepts all such conditions in writing or when the parties execute the agreement.

1.25.2 If the lowest compliant Bid exceeds the Owner's budget, and the Owner is unwilling or unable to award a Contract at the Bid price, the Owner may at its discretion:

1.25.2.1 negotiate, with the lowest compliant Bidder only, changes to the Bid Documents and a reduced Bid price acceptable to the Owner, or

1.25.2.2 invite the three lowest compliant Bidders (only) to re-Bid on modified Bid Documents under a new Bid call.

## **1.26 INTERPRETATION AND MODIFICATION OF BID DOCUMENTS**

1.26.1 If an inquiry requires an interpretation or modification of the Bid Documents, the response to that inquiry will be issued in the form of a written Addendum only, to ensure that all Bidders base their bids on the same information.

1.26.2 Replies to inquiries or interpretations or modifications of the Bid Documents made by e-mail, verbally, or in any manner other than a written Addendum, will not form part of the Bid Documents and will not be binding.

## **1.27 OWNER'S RIGHTS**

1.27.1 The Owner reserves the right to exercise any, all, or a combination of the rights described herein, in addition to any other express or implied rights contained in the Bid Documents.

1.27.2 A Bidder's submission or the opening and/or evaluation of any Bid does not obligate the Owner to:

1.27.2.1 Accept any Bid.

1.27.2.2 Award the Contract.

1.27.2.3 Proceed further with this Bid process.

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

1.27.3.1 Reject any or all Bids.

1.27.3.2 Reject the whole or any part of any Bid(s).

1.27.3.3 Accept the whole or any part of any Bid(s).

1.27.3.4 If only one Bid is received, elect to accept or reject it.

- 1.27.3.5 Cancel this Bid process in whole or in part at any time prior to the award of the Contract with no further actions or justifications.
- 1.27.3.6 Cancel this Bid process at any time prior to the award of the Contract and issue a new competitive procurement process for Work which is the same or similar to The Work, with the same or different participants.
- 1.27.4 The Owner further reserves the right to:
  - 1.27.4.1 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.
  - 1.27.4.2 Award the Contract to any Bidder, including a Bidder other than the Bidder with the lowest Bid.
  - 1.27.4.3 Award the Contract to the Bidder which, in the Owner's sole discretion, provides the best value based on the criteria described in the Bid Documents, including but not limited to:
    - .1 Base Bid Price.
    - .2 Base Bid Price as adjusted by the Owner pursuant to Alternative Prices or other prices provided in the Bid Documents.
    - .3 Clarifications provided pursuant to requirements indicated in Article "Requests for Clarification and Additional Information".
  - 1.27.4.4 Award the Contract to a Bidder which, in the Owner's sole discretion, has submitted a substantially compliant Bid.

## **1.28 ADDENDA**

- 1.28.1 Addenda may be issued to modify the Bid Documents in response to Bidder inquiries or as may be considered necessary.
- 1.28.2 All addenda issued during the Bid period will become part of the Bid Documents.
- 1.28.3 Each Bidder shall ascertain before Bid submission that it has received all addenda issued during the Bid period and shall indicate in the Bid Form the addendum number(s) of all addenda received.
- 1.28.4 Please direct all questions and inquiries as soon as possible in the bid period, via email to [scott@scottbarker.ca](mailto:scott@scottbarker.ca). The final day to submit inquiries is Tuesday July 30, 2024.
- 1.28.5 The final addenda will be issued no later than end of day Friday August 5.

## **1.29 INQUIRIES**

- 1.29.1 Please direct all questions and inquiries as soon as possible in the bid period, via email to [scott@scottbarker.ca](mailto:scott@scottbarker.ca).
- 1.29.2 The final day to submit inquiries is Tuesday July 30, 2024.

## **1.30 AWARD OF CONTRACT, EXECUTION OF THE CONTRACT AND DOCUMENTS TO BE DELIVERED**

- 1.30.1 The Owner reserves the right in its absolute discretion to accept any Bid which it deems most advantageous to itself and the right to reject any or all bids, in each

instance without giving any notice. The lowest or any Bid will not necessarily be accepted.

- 1.30.2 If the Owner decides to award the Contract to a bidder, it will issue a letter of Contract Award.
- 1.30.3 Bidders shall not issue or make any statements or news release concerning their Bid, the Bid process, the Owner's evaluation of the bids, or the Owner's award or cancellation of the Bid process without the express written consent of the Owner.
- 1.30.4 Prior to commencing the Work, the Contractor shall deliver to the Owner:
  - 1.30.4.1 the performance bond and the labour and material payment bond described in the Bid Documents, the form of such bonds to comply with the requirements of the Contract;
  - 1.30.4.2 certified true copies of the insurance policies required by the Bid Documents.
  - 1.30.4.3 a current Clearance Certificate issued by the Workplace Safety and Insurance Board.

### **1.31 REQUESTS FOR CLARIFICATION AND ADDITIONAL INFORMATION**

- 1.31.1 After the Bid closing time, Owner may contact any one or more Bidders to request additional information and clarification without any obligation to contact other Bidders.
- 1.31.2 Bidders shall respond, and Provide promptly to Consultant, all requests for Clarification and Additional Information. Failure to do so may result in the Bid being rejected.
- 1.31.3 Requests for clarification and additional information shall not be construed as award of the Contract, acceptance of a Bid, or the rejection of a Bid.
- 1.31.4 Additional information and clarification requested may include without limitations:
  - 1.31.4.1 submission of a trade-by-trade breakdown of the Bid price;
  - 1.31.4.2 submission of a preliminary construction schedule.
    - .1 Such preliminary construction schedule shall be consistent with the time for Substantial Performance of the Work stated in the Bid Documents or submitted by the Bidder.
    - .2 Such preliminary construction schedule may be in bar chart format and shall include all major sub-trades and show Project milestones and critical schedule items, such as start and completion of major Project components; and/or clarification or any other information.
- 1.31.5 Information, prices, rates and documents submitted in response to a Request for Clarification and Additional Information shall form part of a Bidder's Bid.

### **1.32 BIDDERS' EXPENSES**

- 1.32.1 The Owner shall not be responsible for, and every Bidder shall bear, all costs and expenses incurred relating to any aspect of its participation or intended participation in this Bid process including, without limitation, all costs and expenses related to its involvement in:

- 1.32.1.1 due diligence, investigations, and information gathering processes;
- 1.32.1.2 attendances and/or participation at any meetings;
- 1.32.1.3 preparation and submission of a Bid, including responding to Requests for Clarifications and Additional Information

### 1.33 LIMIT OF LIABILITY

- 1.33.1 The Owner shall not be liable to any Bidder for any claims arising out of this Bid process including:
  - 1.33.1.1 claims arising from the Owner's negligence or other tortious conduct; and/or
  - 1.33.1.2 claims arising from the Owner's breach of the Bid Contract or any other Contract or other obligation that may arise as a result of a Bidder's participation in this Bid process and/or submission of a Bid,
  - 1.33.1.3 reasonable cost to the Bidder of preparing its Bid

### 1.34 FAIR WAGE POLICY

- 1.34.1 Comply with the requirements of the City of Toronto's Fair Wage Policy available at <https://www.toronto.ca/business-economy/doing-business-with-the-city/understanding-the-procurement-process/fair-wage-office-policy/fair-wage-policy/>

### 1.35 UNION LABOUR

- 1.35.1 Comply with requirements of the City of Toronto's labour trade contractual obligations in the construction industry (collective agreements) that apply to the Work, including the Voluntary Recognition Agreement (VRA) with Labourers' International Union of North America (LIUNA)– and abide by such requirements.
- 1.35.2 For additional information, refer to: <https://www.toronto.ca/business-economy/doing-business-with-the-city/understanding-the-procurement-process/purchasing-policies-legislation/voluntary-recognition-agreement-with-labourers-international-union-of-north-america-liuna/>

### 1.36 PROHIBITION ON LOBBYING / COLLUSION

- 1.36.1 Bidders, and/or any representatives employed or retained by them, 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.
- 1.36.2 A Bidder shall not discuss or communicate directly or indirectly with any other Bidder any information whatsoever regarding the preparation of a Bid. Bidders shall prepare and submit Bids independently and without any communication, knowledge, comparison of information, or arrangement, directly or indirectly, with any other Bidder.
- 1.36.3 Failure of any Bidder to comply with this requirement may result in the disqualification of the Bidder and the rejection of its Bid.



### 1.37 DISPUTES

- 1.37.1 In the event of a dispute arising 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 the Bid of any Bidder was submitted on time or whether a Bid meets the Mandatory Requirements, the parties to the dispute agree:
- 1.37.1.1 to use their best efforts to resolve the dispute through amicable and good faith negotiations for a period of at least ten (10) Days, having such written and oral communications and meetings as appropriate.
  - 1.37.1.2 if a dispute is not resolved through negotiations any party may, at any time prior to the dispute being referred to arbitration in accordance with paragraph below, request that a mediator be retained to assist in resolving the dispute. In the event a request for mediation is made, the parties shall, within five (5) Working Days, make reasonable attempts to agree on a mediator and shall mediate the dispute;
  - 1.37.1.3 if the dispute is not resolved through negotiations or within thirty (30) Days of a request for the appointment of a mediator pursuant to paragraph above, the Owner, in its unqualified subjective discretion, may refer the dispute to confidential binding arbitration before a single arbitrator, selected by the Owner, at Toronto, Ontario pursuant to the Arbitration Act, 1991 (Ontario), as amended. In the event that the Owner refers the dispute to arbitration, each Bidder agrees that it is bound to arbitrate such dispute with the Owner. Unless the Owner shall refer such dispute to arbitration, there shall be no arbitration of such dispute.
- 1.37.2 The Owner may give notice of a dispute to one or more or all of the Bidders, each of whom shall be a party to and shall be entitled to participate in the negotiation, mediation 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.
- 1.37.3 In the event 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 Days, subject to the discretion of the arbitrator to increase such time. The parties further agree that there shall be no appeal from the arbitrator's award.
- 1.37.4 This Section is not intended to form part of any "Bid Contract" that may come into being between a Bidder and any prospective Subcontractor or Supplier of that Bidder.

END OF SECTION

## **PART 1 GENERAL**

### **1.1 INFORMATION AVAILABLE TO BIDDERS \***

- 1.1.1 Following Available Information is bound in Specifications appended to this Section.
- 1.1.2 Following Report(s) and document(s) are for information only. Neither Consultant nor Owner assumes any liability for items extracted from documents. These documents do not form part of Contract Documents

### **1.2 REPORTS \***

- 1.2.1 Toxic or Hazardous Substances Investigation Report:
  - 1.2.1.1 A copy of a toxic or hazardous substances investigation report and related letters prepared by the Owner's consultant for the Place of the Work is bound herein. Refer to following:
    - .1 "Designated Substance Assessment in accordance with ONTARIO REGULATION 490/09 DESIGNATED SUBSTANCES", dated 27, April, 2024, prepared by Angelina Bertoni-Sampieri - The Healthy Abode Inc
- 1.2.2 Existing base building drawings will be made available to bidders through a shared drive. The following drawings are included:
  - .1 230 The Esplanade Original Permit Documents obtained from City - for reference only - all date from the late 1980s, early 1990s.
  - .2 288047 architectural-structural-mechanical - 193 sheets
  - .3 302347 mechanical - 18 sheets
  - .4 302349 mechanical - 30 sheets
  - .5 304467 parking garage structure - 23 sheets
  - .6 304996 parking sprinklers - 6 sheets
  - .7 314407 sprinklers - 10 sheets
- 1.2.3 Submit a Base Bid Price which includes and accommodates work implied in, or reasonably inferable from, investigation documents. Owner's investigation consultant will be interpreter of documents. Consultant will be arbiter of a change to Contract Price and/or Contract Time.

## **LEGEND**

*\* - Documents provided by the Owner have been prefixed by an asterisk and are not included under, nor governed by Scott Barker OAA / Scott Barker Architect's seal.*

END OF SECTION



**Designated Substance Assessment  
in accordance with  
ONTARIO REGULATION 490/09  
DESIGNATED SUBSTANCES**

**April 27, 2024**

Sampling Address:  
**St. Lawrence Co-Op Daycare - 230 The Esplanade  
Toronto, ON.,  
M5A 4J6**

Prepared For:  
St. Lawrence Co-Op Daycare

Prepared By: Angelina Bertoni-Sampieri ~ The Healthy Abode Inc.  
File #: 24-3029-DSS

151 Bowie Avenue, Toronto, ON. M6E 2R1  
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tel: 416-901-7527

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APPENDIX A & C: Asbestos Laboratory Results - Lab Report No: 2418032 & 2418329

APPENDIX B: Lead Laboratory Results - Lab Report No: 2418055

## EXECUTIVE SUMMARY

The Healthy Abode Inc. was retained by St. Lawrence Co-Op Daycare for the purpose of conducting a Designated Substance Survey, in accordance with Ontario Regulation 490/09 Designated Substances, at St. Lawrence Co-Op Daycare - 230 The Esplanade, Toronto, ON., M5A 4J6 (the site, the building, the unit).

This investigation and sampling was conducted by Vincenzo Sampieri and Elizabeth Mavroudis of The Healthy Abode Inc. on April 27, 2024 (daycare) and May 1, 2024 (underground parking garage). Access to the building was provided by the manager.

This commercial daycare centre is a single story, ground floor, above a parking garage. The daycare appears to have been built in the 1980s. The scope of this report is limited by the current renovation project scope of work.

The HVAC system is forced air. The supply registers / runs did not appear to be wrapped at the time of testing, if duct / boot wrap is noted it is to be considered to be asbestos containing unless tested and proven otherwise.

The original construction is drywall construction

Asbestos:

*For complete laboratory sampling analysis of asbestos samples taken for the purpose of this project please see section 6.1 of this report.*

**No asbestos detected.**

Lead Paint:

*For complete laboratory sampling analysis of lead samples taken for the purpose of this project please see section 6.2 of this report.*

**There is the presence of lead in the representative paint sample(s).**

**The levels of lead in the representative drywall, block and trim paint samples are <1000 PPM,**

***If these materials (and the surfaces to which they are applied) are disturbed in a non-aggressive manner, performed using normal dust control procedures and are completed so that the TWA for PNOS is not exceeded, then worker protection from the inhalation of lead is not required. General health and safety precautions must still be implemented, which may include, in part, prohibiting eating, drinking, smoking and chewing in the work area, implementing dust suppression techniques and washing facilities for workers to wash hands and face. (EACO Lead Guideline).***

The focus of the DSS was concentrated on materials present in these areas.

The purpose of the DSS is to report on the presence or suspected presence of readily accessible designated substances and hazardous materials which may be impacted during the proposed demolition of the building and to provide recommendations, if required, to remove and manage these materials in accordance with provincial or federal regulations and guidelines. **The designated substances and hazardous materials investigated during this DSS are asbestos-containing materials (ACM), lead, mercury, silica, benzene, polychlorinated biphenyls (PCBs), and ozone depleting substances.** The remaining designated substances, consisting of acrylonitrile, arsenic, coke oven emissions, ethylene oxide, isocyanates, and vinyl chloride, are not expected to be present in this type of building, however were noted if observed.

The Ontario *Occupational Health and Safety Act* requires that a list of all “designated substances” at a project site be provided to all bidders at the tendering stage and that the “constructor” for a project shall ensure that each prospective contractor and subcontractor for the project has received a copy of the list before entering into a contract.

In addition, legal requirements which apply to health and safety on construction projects are set out in the *Ontario Occupational Health and Safety Act* and regulations made under the Act. The *Occupational Health and Safety Act* specifies, in general terms, the duties of employers and others to protect workers from health and safety hazards on the job. These



**Designated Substance Survey**

St. Lawrence Co-Op Daycare  
St. Lawrence Co-Op Daycare - 230 The Esplanade  
Toronto, ON., M5A 4J6

April 27, 2024  
The Healthy Abode Inc.  
File #: 24-3029-DSS  
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duties include taking all reasonable precautions to protect the health and safety of workers and acquainting a worker or a person in authority over a worker with any hazard in the work and in the handling, storage, use, disposal and transport of any hazardous materials. The *Regulation for Construction Projects*, O. Reg. 213/91 (amended to O. Reg. 85/04), applies to all construction projects, and requires the use of appropriate personal protection equipment, training in the use of protective equipment and the provision of adequate washing facilities. Other regulatory requirements (and guidelines) which apply to control of exposure to designated substances are referenced in Sections 3.0 and 4.0 of this report.

The *Occupational Health and Safety Act*, in accordance with ONTARIO REGULATION 490/09 DESIGNATED SUBSTANCES allows for certain toxic substances to be especially designated. This means that specific regulations are constructed for the control of these substances in the workplace. Accordingly, each *Designated Substance Regulation* outlines a set of required steps to control exposure of workers to the substance.

A regulation will apply if the following conditions are met:

- the substance is present;
- exposure is likely if the worker can come in contact with the substance in any form (i.e. solid, liquid, dust, gas, vapour, fume or mist)



## DISCLAIMER

As it pertains to both the testing and visual inspection of this property, the scope of the Designated Substance Survey is limited to the readily accessible areas of the property and is based on the condition of the property at the precise time and date of the sampling and on the laboratory analysis of the samples collected. Designated Substances can exist in inaccessible and non-visible areas such as behind walls.

It is understood *The Healthy Abode Inc.* and the laboratory are not insurers and that the visual observations, laboratory analysis and report shall not be construed as a guarantee or warranty of any kind. The client agrees to hold *The Healthy Abode Inc.* and their respective officers, agents and employees harmless from and against any and all liabilities, demands, claims, and expenses incident thereto for injuries to persons and for loss of, damage to, destruction of property, cost of repairing or replacing, or consequential damage arising out of or in connection with this inspection and testing.

If suspected asbestos containing materials and/or lead containing materials not identified in this report are encountered during demolition activities, the work should stop immediately and the material tested to confirm the presence or absence of asbestos and/or lead.

This report is prepared for the sole use of the client. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility and at the sole risk of the third party. This report must be considered in its entirety.

This report is based on data and information collected based solely on site conditions encountered at the time of the assessment date. Conditions may vary beyond the locations tested, and may vary over time.

The data reports and the findings, observations and conclusions expressed in this report are limited by the Scope of Work.

The Healthy Abode Inc. will not be responsible for any real or perceived decrease in property value, its saleability or ability to gain financing through the reporting of information in this report. The Healthy Abode Inc.'s reports present professional opinions and findings of a scientific and technical nature. While attempts were made to relate the data and findings to applicable environmental laws, regulations, industry standards or guidelines, the report shall not be construed to offer legal opinion or representations as to the requirements of, nor compliance with, environmental laws, rules, regulations or policies of federal, provincial or local governmental agencies. Any use of this report constitutes acceptance of this disclaimer and the limits of The Healthy Abode Inc.'s liability.



## 1.0 METHOD & SCOPE OF WORK

The purpose of the DSS is to report on the presence or suspected presence of readily accessible designated substances and hazardous materials which may be impacted during the proposed demolition of the building and to provide recommendations, if required, to remove and manage these materials in accordance with provincial or federal regulations and guidelines.

Site work was completed in accordance with the current regulations made under the Ontario Occupational Health and Safety Act, R.S.O. 1990 (as amended) and other standards, guidelines and practices applicable to this location.

**The designated substances and hazardous materials investigated during this DSS are asbestos-containing materials (ACM), lead, mercury, silica, benzene, polychlorinated biphenyls, and ozone depleting substances.** The remaining designated substances, consisting of acrylonitrile, arsenic, coke oven emissions, ethylene oxide, isocyanates, and vinyl chloride, are not expected to be present in this type of building, however were noted if observed.

### SITE VISIT AND TESTING: **April 27, 2024**

#### Inspection:

- readily available information was gathered regarding the building including age, type of structure, presence of renovated areas or additions
- the building systems reviewed as part of this investigation included primarily architectural aspects, although where readily accessible mechanical and structural systems were also reviewed
- the areas surveyed were visually inspected in order to identify readily-accessible areas for the presence of designated substances used in building construction materials
- for materials suspected of being asbestos containing materials **ACM**, bulk samples were collected in accordance with O. Reg 278/05 sampling protocols to be analyzed by a laboratory. Homogenous materials sampling was utilized during the course of the investigation, meaning that bulk material sampling was completed on homogenous materials that are uniform in color, texture, and installation or construction date.
- for materials suspected of containing **lead paint**, representative samples were collected to be analyzed by a laboratory
- a review of potential **mercury**-containing equipment installed at the site was completed as part of the survey, such that any mercury-containing switches, thermostats (switch bulbs), mercury containing lamps (include fluorescent bulbs) and pressure-sensing devices were noted, if observed
- the site was visually assessed for materials suspected of containing **silica**, and these materials are noted in this report
- the site was visually assessed for materials suspected of containing **benzene**, and these materials are noted in this report
- the site was visually assessed for the presence of **polychlorinated biphenyls (PCBs)** such as in fluorescent light ballasts. PCB containing materials were noted, if observed
- a review of **ozone depleting substances** such as refrigeration and air conditioning units was completed to verify the presence of ozone depleting substances, if observed

#### Laboratory analysis:

- obtaining representative bulk samples of materials suspected of containing asbestos and lead paint. The Healthy Abode Inc. uses PARACEL LABORATORIES - CALA Accredited Laboratory - 1262, NVLAP Accredited Laboratory Lab Codes 200812-0 and 200863-0
- laboratory analysis of bulk samples for asbestos content and analysis of paint chip samples for lead content;
- For the purpose of this DSS **24 samples (stop positive placed on laboratory report)** were collected in order to test for asbestos and **3 paint chips** were collected in order to test for lead

#### Reports:

- Lab report(s) - analysis of bulk samples taken during inspection
- The Healthy Abode Inc. report - report outlining the findings of the inspection and analysis of the laboratory results



## 2.0 BACKGROUND INFORMATION ON APPLICABLE SUBSTANCES

### 2.1 Asbestos:

Asbestos has been widely used in buildings, both in friable applications such as pipe wrap and acoustic texture material and in non-friable manufactured products such as floor tile and cement board. The use of asbestos in friable applications was curtailed around the mid-1970s and, as such, many buildings constructed prior to 1975 contain some form of friable construction material with an asbestos content. The use of asbestos in certain non-friable materials continued beyond the mid-1970s, such as brake pads.

In Ontario, asbestos is regulated by Ontario Regulation 490/09 - *Designated Substances*. Control of exposure to asbestos is governed in Ontario by Regulation 278/05 - *Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations*. Disposal of asbestos waste (friable and non-friable materials) is governed by Ontario Regulation 278/05 and by Ontario Regulation 347, Waste Management - General. O. Reg. 278/05 classifies asbestos work operations into three types (Type 1, Type 2 and Type 3, as shown in 4.0 - Review of Guidelines Section of this report) and specifies procedures to be followed in conducting asbestos abatement work.

### 2.2 Lead:

Lead is a heavy metal that can be found in construction materials such as paints, coatings, mortar, concrete, solder, packings, sheet metal, caulking, glazed ceramic products and cable splices. Lead has been used historically in exterior and interior paints. "Lead-based paint" is defined in federal legislation in the United States as paint which contains 0.5 percent by weight (5,000 PPM) or more lead. In Canada, the lead content of paints and other liquid coatings on furniture, household products, children's products and surfaces (exterior and interior) of any building frequented by children was restricted to 0.5% by 1976.

The *Surface Coating Materials Regulations* made under the *Hazardous Products Act*, published in the Canada Gazette Vol. 139, No. 9 published on May 4, 2005 currently restricts the maximum total lead content requirement to 600 mg/kg (0.06 percent weight/weight or 600 parts per million) for surface coating materials (i.e. paints) used in or around a house or other premises attended by children or pregnant women.

In Ontario, lead is regulated by Ontario Regulation 490/09 - *Designated Substances*. The Ministry of Labour *Guideline, Lead on Construction Projects*, September 2004, provides guidance in the measures and procedures that should be followed when handling lead-containing materials during construction projects. In the guideline, lead-containing construction materials are classified into three groups (Type 1, Type 2 and Type 3, as shown in 4.0 - Review of Guidelines Section of this report) and specified procedures to be followed in lead safe handling activities.

### 2.3 Mercury:

Mercury has been used in electrical equipment such as alkaline batteries, high intensity discharge (HID) lights, "silent switches" and in instruments such as thermometers, manometers and barometers, pressure gauges, float and level switches and flow meters. Mercury-containing lamps, the bulk of which are 1.22 m (four feet) fluorescent lamps contain between 7 and 40 mg of mercury each. Mercury compounds have also been used by many manufactures historically as additives in latex paint to protect the paint from mildew and bacteria during production and storage.

The intentional addition of mercury to Canadian-produced consumer paints for interior use was prohibited in 1991. Mercury may have remained in paints after 1991, however, as a result of impurities in the paint ingredients or cross-contamination due to other manufacturing processes. The *Surface Coating Materials Regulations* made under the *Hazardous Products Act*, published in the Canada Gazette Vol. 139, No. 9 published on May 4, 2005 sets a maximum total mercury concentration of 10mg/kg (0.001 percent weight/weight) for all surface coating materials (including paint.)

Mercury containing thermostats and silent light switches are mercury tilt switches which are small tubes with electrical contacts at one end of the tube. A mercury tilt switch is usually present when no switch is visible. Mercury switches often have the word "TOP" stamped on the upper end of the switch, which is visible after removing the cover plate. If mercury switches are to be removed, the entire switch should be removed and placed into a suitable container for storage and disposal.

No special requirements exist in Ontario for disposal of small quantities (i.e. less than 30) of waste light tubes. Larger quantities of waste light tubes (>30) generated during renovations or building demolition and waste mercury from equipment must either be recycled or disposed of in accordance with the requirements of O. Reg. 347 - *Waste Management General*.

Waste mercury in amounts less than 5 kg (per month) are exempt from the generator registration requirements prescribed by O. Reg. 347 - *Waste Management - General*. Waste mercury from mercury switches or gauges should, however, be properly collected and shipped to a recycling facility or disposed of as a hazardous waste. Removal of mercury-containing equipment (e.g. switches, gauges, controls etc.) should be carried out in a manner which prevents spillage and exposure to workers.

In Ontario, mercury is regulated by Ontario Regulation 490/09 - *Designated Substances*. The measures and procedures in the Ministry of Labour *Guideline - Lead in Construction Projects* for control of exposure of lead from paint applications during construction activities will also serve to control potential exposure to mercury in paint.

#### 2.4 Silica:

Silica (SiO<sub>2</sub>) is a compound resulting from the combination of one atom of silicon with two atoms of oxygen. It is the second most common mineral in the earth's crust and is a major component of sand, rock and mineral ores. Silica exists in several forms, of which crystalline silica is of most concern. The best-known and most abundant type of crystalline silica is quartz. Other forms of crystalline silica include cristobalite, tridymite, and tripoli.

In construction, worker exposure to silica is of particular concern because silica is the primary component of many construction materials. Some commonly used construction materials containing silica include: abrasives used for blasting, brick, refractory brick, concrete, concrete block, cement, mortar, granite, sandstone, quartzite, slate, gunite, mineral deposits, rock and stone, sand, fill dirt, top soil and asphalt containing rock or stone.

Many construction activities can generate airborne silica-containing dust, however, in construction abrasive blasting generates the most dust.

In Ontario, silica is regulated by Ontario Regulation 490/09 - *Designated Substances*. The Ministry of Labour *Guideline, Silica on Construction Projects*, April 2011, provides guidance in the measures and procedures that should be followed when handling silica-containing materials during construction projects. In the guideline, silica-containing construction materials are classified into three groups (Type 1, Type 2 and Type 3, as shown in 4.0 - Review of Guidelines Section of this report) and specified procedures to be followed in lead safe handling activities.

#### 2.5 Benzene:

According to the World Health Organization, human exposure to benzene has been associated with a range of acute and long-term adverse health effects and diseases, including cancer and aplastic anaemia. Exposure can occur occupationally and domestically as a result of the ubiquitous use of benzene-containing petroleum products, including motor fuels and solvents. Active and passive exposure to tobacco smoke is also a significant source of exposure. Benzene is highly volatile, and exposure occurs mostly through inhalation.

Benzene has been detected at high levels in indoor air. Although some of this exposure might be from building materials (paints, adhesives, etc.), most is from cigarette smoke in both homes and public spaces. Levels of benzene are higher in homes with attached garages than in those with detached garages. Levels are increased in homes close to petrol filling stations. Benzene may be released to indoor air from unflued oil heating and from the use of benzene-containing consumer products in residences. People spending more time indoors, such as children, are likely to have higher exposure to benzene.

"Aromatic" compounds make up about 35% of fuel oil, such as benzene, toluene, and xylene. The standard for **benzene** is 5 parts per billion (ppb).

In Ontario, benzene is regulated by Ontario Regulation 490/09 - *Designated Substances*. The previous Ontario Regulation was RRO 1990, Regulation 839 - Designated Substance - Benzene.

## 2.6 Polychlorinated Biphenyls (PCBs):

Polychlorinated biphenyls, commonly known as chlorobiphenyls or PCBs, are industrial chemicals which were synthesized and commercialized in North America in 1929. They were used in the manufacturing of electrical equipment, heat exchangers, hydraulic systems, and several other specialized applications up to the late 1970s. They were never manufactured in Canada but were widely used in this country.

The import, manufacture, and sale (for re-use) of PCBs were made illegal in Canada in 1977 and release to the environment of PCBs was made illegal in 1985. However, Canadian legislation has allowed owners of PCB equipment to continue using PCB equipment until the end of its service life. The storage of PCBs has been regulated since 1988. Handling, transport and destruction of PCBs are also regulated, mostly under provincial regulations.

In residential and commercial buildings, PCBs are often present in lighting ballasts and other electrical equipment including small capacitors (in washing machines, hair dryers, neon tubes, dishwashers and power supply units) and circuit breakers. In larger industrial facilities PCBs may be present in transformers, heat transfer fluids and voltage regulators.

Environment Canada has therefore repealed the *Chlorobiphenyls Regulations* and the *Storage of PCB Material Regulations* on September 5, 2008 and made the *PCB Regulations* under the *Canadian Environmental Protection Act, 1999 (CEPA 1999)* that set specific dates for the destruction of PCBs in service and in storage.

In Ontario, waste management of PCBs is governed by Ontario Regulation 232/11, which is the amended Reg. 362 of R.R.O. 1990 - *Waste Management - PCBs*.

## 2.6 Ozone Depleting Substances:

Certain chemicals (such as chlorofluorocarbons, hydrochlorofluorocarbons and halons) are recognized as ozone-depleting substances (ODS) because they breakdown in the stratosphere and release chlorine or bromine, which destroy the stratospheric ozone layer. Most ODS are also greenhouse gases.

The most common uses of ozone-depleting substances are as refrigerants in commercial, home and vehicle air conditioners and refrigerators, foam blowing agents, solvents, aerosol spray propellants, fire extinguishing agents and chemical reactants.

Control, handling, sale, disposal, transport and transfer of ozone depleting substances is governed in Ontario by Regulation 463/10 - *Ozone Depleting Substances and Other Halocarbons*.

## 3.0 REVIEW OF GUIDELINES

### 3.1 GENERAL:

#### Duties of Employers:

The Occupational Health and Safety Act (OHSA) sets out, in very general terms, the duties of employers and others to protect workers from health and safety hazards on the job. These duties include:

- taking all reasonable precautions to protect the health and safety of workers [clause 25(2)(h)]
- ensuring that equipment, materials and protective equipment are maintained in good condition [clause 25(1)(b)]
- providing information, instruction and supervision to protect worker health and safety [clause 25(2)(a)]
- acquainting a worker or a person in authority over a worker with any hazard in the work and in the handling, storage, use, disposal and transport of any article, device, equipment or a biological, chemical or physical agent [clause 25(2)(d)].

In addition, section 30 of the OHSA deals with the presence of designated substances on construction projects. Since asbestos, lead, mercury and silica are a designated substances (O. Reg. 490/09), compliance with the OHSA and its Regulations will require some action to be taken where there is a asbestos, lead, mercury and/or silica hazard on a construction project.

#### Duties of Owners:

Section 30 requires the owner of a project to determine if asbestos, lead, mercury and/or silica is present on a project and, if it is, to so inform all potential contractors as part of the bidding process. In a similar way, contractors who receive this information are to pass it onto other contractors and subcontractors who are bidding for work on the project. If the owner or any contractor fails to comply with this requirement, they will be liable for any loss or damages that result from a contractor subsequently discovering that asbestos, lead, mercury and/or silica is present.

#### Workplace Hazardous Materials Information System. (R.R.O. 1990, Reg. 860):

The Workplace Hazardous Materials Information System (WHMIS) Regulation applies to all workplaces covered by the OHSA. Any employer or constructor who uses WHMIS controlled products is required to comply with the WHMIS Regulation (Reg. 860) regarding the requirements for labels, material safety data sheets, and worker education and training.

The Ministry of Labour is responsible for the administration and enforcement of both federal and provincial WHMIS legislation.

#### Regulation for Construction Projects (O. Reg. 213/91):

The Regulation for Construction Projects (O. Reg. 213/91) applies to all construction projects. Although asbestos, lead, mercury and/or silica is not mentioned specifically, the following sections of the O. Reg. 213/91 would apply to situations where there is the potential for workers to be exposed to any one of these hazards:

##### Clause 14

*(5) A competent person shall perform tests and observations necessary for the detection of hazardous conditions on a project.*

##### Section 21

*(1) A worker shall wear such protective clothing and use such personal protective equipment or devices as are necessary to protect the worker against the hazards to which the worker may be exposed.*

*(2) A worker's employer shall require the worker to comply with subsection (1).*

*(3) A worker required to wear personal protective clothing or use personal protective equipment or devices shall be adequately instructed and trained in the care and use of the clothing, equipment or device before wearing or using it.*

##### Section 30

*Workers who handle or use substances likely to endanger their health shall be provided with washing facilities with clean water, soap and individual towels.*

#### Section 46

- (1) A project shall be adequately ventilated by natural or mechanical means,  
(a) if a worker may be injured by inhaling a noxious dust or fume;  
(2) If it is not practicable to provide natural or mechanical ventilation in the circumstances described in clause (1)  
(a), respiratory protective equipment suitable for the hazard shall be provided and be used by the workers.

#### Section 59

If the dissemination of dust is a hazard to a worker, the dust shall be adequately controlled or each worker who may be exposed to the hazard shall be provided with adequate personal protective equipment.

### 3.2 ASBESTOS

#### SUMMARY OF APPLICATION AND CLASSIFICATION OF TYPE 1, 2 AND 3 OPERATIONS ONTARIO REGULATION 278/05 DESIGNATED SUBSTANCE

#### -ASBESTOS ON CONSTRUCTION PROJECTS AND IN BUILDINGS AND REPAIR OPERATIONS, January 2011

\* for complete Asbestos information - Control of exposure to asbestos is governed in *Ontario Regulation 278/05 Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations*. Disposal of asbestos waste (friable and non-friable materials) is governed by Ontario Regulation 278/05 and by Ontario Regulation 347, *Waste Management - General*. O. Reg. 278/05 classifies asbestos work operations into three types (Type 1, 2 and 3, as shown below) and specifies procedures to be followed in conducting asbestos abatement work.

#### Application

- 2. (1)** This Regulation applies to,
- (a) every project, its owner, and every constructor, employer and worker engaged in or on the project;
  - (b) the repair, alteration or maintenance of a building, the owner of the building, and every employer and worker engaged in the repair, alteration or maintenance;
  - (c) every building in which material that may be asbestos-containing material has been used, and the owner of the building;
  - (d) the demolition of machinery, equipment, aircraft, ships, locomotives, railway cars and vehicles, and every employer and worker engaged in the demolition; and
  - (e) subject to subsection (3),
    - (i) work described in subsection (2) in which asbestos-containing material is likely to be handled, dealt with, disturbed or removed, and
    - (ii) every employer and worker engaged in the work. O. Reg. 278/05, s. 2 (1).

#### CLASSIFICATION OF WORK

##### Type 1, Type 2 and Type 3 operations

12. **(1)** For the purposes of this Regulation, operations that may expose a worker to asbestos are classified as Type 1, Type 2 and Type 3 operations. O. Reg. 278/05, s. 12 (1).

**(2) The following are Type 1 operations:**

- 1. Installing or removing ceiling tiles that are asbestos-containing material, if the tiles cover an area less than 7.5 square metres and are installed or removed without being broken, cut, drilled, abraded, ground, sanded or vibrated.
- 2. Installing or removing non-friable asbestos-containing material, other than ceiling tiles, if the material is installed or removed without being broken, cut, drilled, abraded, ground, sanded or vibrated.
- 3. Breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing material if,
  - i. the material is wetted to control the spread of dust or fibres, and
  - ii. the work is done only by means of non-powered hand-held tools.
- 4. Removing less than one square metre of drywall in which joint-filling compounds that are asbestos-containing material have been used. O. Reg. 278/05, s. 12 (2).

**(3) The following are Type 2 operations:**

1. Removing all or part of a false ceiling to obtain access to a work area, if asbestos-containing material is likely to be lying on the surface of the false ceiling.
2. The removal or disturbance of one square metre or less of friable asbestos-containing material during the repair, alteration, maintenance or demolition of all or part of machinery or equipment or a building, aircraft, locomotive, railway car, vehicle or ship.
3. Enclosing friable asbestos-containing material.
4. Applying tape or a sealant or other covering to pipe or boiler insulation that is asbestos-containing material.
5. Installing or removing ceiling tiles that are asbestos-containing material, if the tiles cover an area of 7.5 square metres or more and are installed or removed without being broken, cut, drilled, abraded, ground, sanded or vibrated.
6. Breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing material if,
  - i. the material is not wetted to control the spread of dust or fibres, and
  - ii. the work is done only by means of non-powered hand-held tools
7. Removing one square metre or more of drywall in which joint filling compounds that are asbestos-containing material have been used.
8. Breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing material if the work is done by means of power tools that are attached to dust-collecting devices equipped with HEPA filters.
9. Removing insulation that is asbestos-containing material from a pipe, duct or similar structure using a glove bag.
10. Cleaning or removing filters used in air handling equipment in a building that has sprayed fireproofing that is asbestos-containing material.
11. An operation that,
  - i. is not mentioned in any of paragraphs 1 to 10,
  - ii. may expose a worker to asbestos, and
  - iii. is not classified as a Type 1 or Type 3 operation. O. Reg. 278/05, s. 12 (3).

**(4) The following are Type 3 operations:**

1. The removal or disturbance of more than one square metre of friable asbestos-containing material during the repair, alteration, maintenance or demolition of all or part of a building, aircraft, ship, locomotive, railway car or vehicle or any machinery or equipment.
2. The spray application of a sealant to friable asbestos-containing material.
3. Cleaning or removing air handling equipment, including rigid ducting but not including filters, in a building that has sprayed fireproofing that is asbestos-containing material.
4. Repairing, altering or demolishing all or part of a kiln, metallurgical furnace or similar structure that is made in part of refractory materials that are asbestos-containing materials.
5. Breaking, cutting, drilling, abrading, grinding, sanding or vibrating non-friable asbestos-containing material, if the work is done by means of power tools that are not attached to dust-collecting devices equipped with HEPA filters.
6. Repairing, altering or demolishing all or part of any building in which asbestos is or was used in the manufacture of products, unless the asbestos was cleaned up and removed before March 16, 1986. O. Reg. 278/05, s. 12 (4).

**(5)** Work on ceiling tiles, drywall or friable asbestos-containing material is classified according to the total area on which work is done consecutively in a room or enclosed area, even if the work is divided into smaller jobs. O. Reg. 278/05, s. 12 (5).

### 3.3 LEAD

## SUMMARY OF CLASSIFICATION OF LEAD-CONTAINING CONSTRUCTION TASKS MOL GUIDELINE - LEAD ON CONSTRUCTION PROJECTS, April 2011

### CANADIAN SURFACE COATING MATERIALS REGULATIONS (SOR/2016-193)

\* for complete Guideline, see Ontario Ministry of Labour *Guideline: Lead on Construction Projects & CANADIAN SURFACE COATING MATERIALS REGULATIONS (SOR/2016-193)*

(SOR/2016-193) Lead content and test method — 2 (1) A surface coating material must not contain more than 90 mg/kg total lead when a dried sample is tested in accordance with a method that conforms to good laboratory practices.

Lead can be present on construction projects in two distinct ways:

1. It can be found in construction materials, such as paints, coatings, mortar, concrete, solder, and sheet metal.
2. It can be present at a construction site in existing structures, building components, and where lead was previously used in a manufacturing process.

Construction activities of particular concern include:

1. abrasive blasting of structures coated with lead-based paints
2. application or removal of lead-containing paints
3. welding, burning, or high temperature cutting of lead-containing coatings or materials
4. removal of lead-containing dust using an air mist extraction system
5. removal of lead-containing mortars using an electric or pneumatic cutting device.

### CONTROLLING THE LEAD HAZARD

Lead may affect the health of workers if it is in a form that may be inhaled (i.e. airborne particles) or ingested. In order for lead to be a hazard by inhalation, lead particles that are small enough to be inhaled must get into the air. There are three types of particles: dust, fume and mist. Lead dust consists of solid particles created through processes such as blasting, sanding, grinding, and electric or pneumatic cutting. Lead fumes are produced when lead or lead-contaminated materials are heated to temperatures above 500 degrees C, such as welding, high temperature cutting, and burning operations. The heating causes a vapour to be given off and the vapour condenses into solid fume particles. Mists are made up of liquid droplets suspended in air. The spray application of lead-based paint can generate a high concentration of lead-containing mist.

The strategy for controlling airborne lead hazard can therefore be broken down into three basic approaches:

1. prevent lead from getting into the air
2. remove lead present in the air
3. if present in the air, prevent workers from inhaling it.

To prevent the ingestion of lead, workers should exercise good work and hygiene practices.

To avoid the ingestion, inhalation and unintentional transfer of lead from contaminated areas, it is essential to have the following control methods in place:

1. engineering controls
2. work practices and hygiene practices
3. protective clothing and equipment
4. training.

### CLASSIFICATION OF WORK

It is the classification of the work that determines the appropriate respirators, measures and procedures that should be followed to protect the worker from lead exposure. In this guideline, lead-containing construction operations are classified into three groups, Type 1, Type 2, and Type 3 operations, and can be thought of as being of low, medium and high risk. Some groups, Type 2 and Type 3, are further subdivided. From Type 1 to Type 3 operations, the corresponding respirator requirements, and measures and procedures become increasingly stringent.

The classification of typical lead-containing construction tasks is based on presumed airborne concentrations obtained from the U.S. Occupational Safety and Health Administration (OSHA), the Ontario Ministry of Labour, and published research studies. The classification of Type 1, Type 2, or Type 3 operations are grouped based on the following concentrations of airborne lead:

Type 1 Operations	Type 2 Operations - Type 2a	Type 2 Operations - Type 2b	Type 3 Operations - Type 3a	Type 3 Operations - Type 3b
< 0.05 mg/m <sup>3</sup>	>0.05 to 0.50 mg/m <sup>3</sup>	>0.50 to 1.25 mg/m <sup>3</sup>	>1.25 to 2.50 mg/m <sup>3</sup>	> 2.50 mg/m <sup>3</sup>

**TYPE 1 OPERATIONS**

1. Application of lead-containing coatings with a brush or roller.
2. Removal of lead-containing coatings with a chemical gel or paste and fibrous laminated cloth wrap.
3. Removal of lead-containing coatings or materials using a power tool that has an effective\* dust collection system equipped with a HEPA filter.
4. Installation or removal of lead-containing sheet metal.
5. Installation or removal of lead-containing packing, babbitt or similar material.
6. Removal of lead-containing coatings or materials using non-powered hand tools, other than manual scraping or sanding.
7. Soldering.

\* Effective implies that the dust collection system should be capable of controlling airborne lead concentration levels to below 0.05 mg/m<sup>3</sup>. Employers should follow manufacturer’s recommendations and maintenance specifications for optimal function.

**TYPE 2 OPERATIONS**

**TYPE 2a OPERATIONS**

1. Welding or high temperature cutting of lead-containing coatings or materials outdoors. This operation is considered a Type 2a operation only if it is short-term, not repeated, and if the material has been stripped prior to welding or high temperature cutting. Otherwise, it will be considered a Type 3a operation.
2. Removal of lead-containing coatings or materials by scraping or sanding using non- powered hand tools.
3. Manual demolition of lead-painted plaster walls or building components by striking a wall with a sledgehammer or similar tool.

**TYPE 2b OPERATIONS**

1. Spray application of lead-containing coatings.

**TYPE 3 OPERATIONS**

**TYPE 3a OPERATIONS**

1. Welding or high temperature cutting of lead-containing coatings or materials indoors or in a confined space.
2. Burning of a surface containing lead.
3. Dry removal of lead-containing mortar using an electric or pneumatic cutting device.
4. Removal of lead-containing coatings or materials using power tools without an effective dust collection system equipped with a HEPA filter.
5. Removal or repair of a ventilation system used for controlling lead exposure.
6. Demolition or cleanup of a facility where lead-containing products were manufactured.
7. An operation that may expose a worker to lead dust, fume or mist that is not a Type 1, Type 2, or Type 3b operation.

**TYPE 3b OPERATIONS**

1. Abrasive blasting of lead-containing coatings or materials.
2. Removal of lead-containing dust using an air mist extraction system.

Employers, supervisors, and workers should be able to recognize and classify lead-containing operations in order to provide appropriate respirators, measures and procedures. Respirator requirements are listed in Table 1 for Type 1, Type 2, and Type 3 operations.





**3.4 MERCURY**  
**SUMMARY OF HAZARDOUS PRODUCTS ACT - SURFACE COATING MATERIALS REGULATIONS**  
**Canada Gazette, Vol. 139, No. 9 - May 4, 2005**

**CANADIAN SURFACE COATING MATERIALS REGULATIONS (SOR/2016-193)**

\* for Recommended Default Guideline, see Ontario Ministry of Labour *Guideline: Lead on Construction Projects*

No special requirements exist in Ontario for disposal of small quantities (i.e. less than 30) of waste light tubes. Larger quantities of waste light tubes (>30) generated during renovations or building demolition and waste mercury from equipment must either be recycled or disposed of in accordance with the requirements of O. Reg. 347 - *Waste Management General*.

Waste mercury in amounts less than 5 kg (per month) are exempt from the generator registration requirements prescribed by O. Reg. 347 - *Waste Management - General*. Waste mercury from mercury switches or gauges should, however, be properly collected and shipped to a recycling facility or disposed of as a hazardous waste. Removal of mercury-containing equipment (e.g. switches, gauges, controls etc.) should be carried out in a manner which prevents spillage and exposure to workers.

**Mercury content and test method** — 5 A surface coating material must not contain more than 10 mg/kg total mercury when a dried sample is tested in accordance with a method that conforms to good laboratory practices.

The measures and procedures in the Ministry of Labour *Guideline - Lead in Construction Projects* for control of exposure of lead from paint applications during construction activities will also serve to control potential exposure to mercury in paint.

**3.5 SILICA**  
**SUMMARY OF CLASSIFICATION OF SILICA-CONTAINING CONSTRUCTION TASKS**  
**MOL GUIDELINE, SILICA ON CONSTRUCTION PROJECTS, April 2011**

\* for complete Guideline, see Ontario Ministry of Labour *Guideline: Silica on Construction Projects*

In construction, worker exposure to silica is of particular concern because silica is the primary component of many construction materials. Some commonly used construction materials containing silica include:

1. abrasives used for blasting
2. brick, refractory brick
3. concrete, concrete block, cement, mortar
4. granite, sandstone, quartzite, slate
5. gunite
6. mineral deposits
7. rock and stone
8. sand, fill dirt, top soil
9. asphalt containing rock or stone.

Many construction activities can generate airborne silica-containing dust. In construction, abrasive blasting generates the most dust. Exposure to silica from abrasive blasting can result if the abrasive contains silica and/or if the material being blasted contains silica.

**CONTROLLING THE SILICA HAZARD**

In order for silica to be a hazard, silica-containing dust particles that are small enough to be inhaled (i.e., respirable) must get into the air. The strategy for controlling the silica hazard can therefore be broken down into three basic approaches:

1. prevent silica dust from getting into the workplace air
2. remove silica dust present in the air
3. if present, prevent workers from inhaling the dust.

To avoid the inhalation of silica, it is essential to have the following control methods in place:

4. engineering controls
5. work practices and hygiene practices
6. respirators and personal protective equipment
7. training.

## CLASSIFICATION OF WORK

In the Guideline, silica-containing construction operations are classified into three groups - Type 1 (low-risk), Type 2 (medium-risk) and Type 3 (high-risk) based on presumed airborne concentrations of respirable crystalline silica in the form of cristobalite, tridymite, quartz and tripoli shown below.

	Type 1 Operations	Type 2 Operations	Type 3 Operations
Cristobalite and Tridymite	>0.05 to 0.50 mg/m <sup>3</sup>	>0.50 to 2.50 mg/m <sup>3</sup>	>2.5 mg/m <sup>3</sup>
Quartz and Tripoli	>0.10 to 1.0 mg/m <sup>3</sup>	>1.0 to 5.0 mg/m <sup>3</sup>	>5.0 mg/m <sup>3</sup>

Note: The Classification of silica-containing construction tasks is based on presumed concentrations of respirable crystalline silica, as shown above.

The following section lists the typical construction operations that generate silica-containing dust:

### TYPE 1 OPERATIONS

1. The drilling of holes in concrete or rock that is not part of a tunnelling operation or road construction.
2. Milling of asphalt from concrete highway pavement.
3. Charging mixers and hoppers with silica sand (sand consisting of at least 95 per cent silica) or silica flour (finely ground sand consisting of at least 95 per cent silica).
4. Any other operation at a project that requires the handling of silica-containing material in a way that may result in a worker being exposed to airborne silica.
5. Entry into a dry mortar removal or abrasive blasting area while airborne dust is visible for less than 15 minutes for inspection and/or sampling.
6. Working within 25 metres of an area where compressed air is being used to remove silica-containing dust outdoors.

### TYPE 2 OPERATIONS

1. Removal of silica containing refractory materials with a jackhammer.
2. The drilling of holes in concrete or rock that is part of a tunnelling or road construction.
3. The use of a power tool to cut, grind, or polish concrete, masonry, terrazzo or refractory materials.
4. The use of a power tool to remove silica containing materials.
5. Tunnelling (operation of the tunnel boring machine, tunnel drilling, tunnel mesh installation).
6. Tuck point and surface grinding.
7. Dry mortar removal with an electric or pneumatic cutting device.
8. Dry method dust cleanup from abrasive blasting operations.
9. The use of compress air outdoors for removing silica dust.
10. Entry into area where abrasive blasting is being carried out for more than 15 minutes.

### TYPE 3 OPERATIONS

- 1 Abrasive blasting with an abrasive that contains  $\geq 1$  per cent silica.
- 2 Abrasive blasting of a material that contains  $\geq 1$  per cent silica.

Employers, supervisors, and workers should be able to recognize and correctly classify the types of operations carried out in the workplace, in order to select appropriate respirators, and implement appropriate measures and procedures. Respirator requirements are listed in Table 1 of Ontario Ministry of Labour *Guideline: Silica on Construction Projects* (**Table 1: Respirator Requirements, pp 15**) for Type 1, Type 2, and Type 3 operations.

**3.6 BENZENE**  
**ONTARIO REGULATION 490/09, AMENDING REG. 839 OF R.R.O. 1990**  
**MINISTRY OF LABOUR - CURRENT OCCUPATIONAL EXPOSURE LIMITS, REG 833**

\* for complete benzene information, see ONTARIO REGULATION 490/09, AMENDING REG. 839 OF R.R.O. 1990

Benzene is prescribed as a designated substance. R.R.O. 1990, Reg. 839, s. 2.

3. (1) Subject to subsection (3), this Regulation applies to every employer and worker at a workplace where a worker is likely to inhale, absorb or come into contact with benzene or a product containing benzene during its transportation or transfer, or during the manufacture, processing, use, handling or storage of benzene or a product containing benzene. R.R.O. 1990, Reg. 839, s. 3 (1).

(2) Subject to subsection (3), an employer to whom this Regulation applies shall take every precaution reasonable in the circumstances to ensure that every worker who is not an employee of the employer but who is working in the workplace of the employer and is exposed to benzene and whose health is likely to be affected thereby is protected and the worker shall comply with the requirements of the employer. R.R.O. 1990, Reg. 839, s. 3 (2).

(3) Subsection (2) and sections 4 to 17 do not apply to,

- (a) an employer or to the workers of an employer who primarily carries on the business of construction; or
- (b) the delivery of gasoline by a gasoline pump into the fuel tank of a motor vehicle, motor boat or other water craft or into a portable container at a service station or other premises. R.R.O.1990, Reg. 839, s. 3 (3)

**3.7 POLYCHLORINATED BIPHENYLS (PCBs)**  
**ONTARIO REGULATION 232/11, AMENDING REG. 362 OF R.R.O. 1990**  
**(WASTE MANAGEMENT-PCBs), June 2, 2011**

\* for complete PCBs information, see ONTARIO REGULATION 232/11, AMENDING REG. 362 OF R.R.O. 1990

“PCB” means any monochlorinated or polychlorinated biphenyl or any mixture of them or any mixture that contains one or more of them; (“BPC”)

“PCB materials” means materials containing PCBs at a concentration of more than fifty parts per million by weight whether the material is liquid or not; (“matières contenant des BPC”)

“PCB waste” means PCB equipment, PCB liquid or PCB material, but does not include,

- (a) PCB material or PCB equipment after it has been decontaminated pursuant to guidelines issued by the Ministry of the Environment or instructions issued by the Director,
- (b) PCB equipment that is,
  - (i) an electrical capacitor that has never contained over one kilogram of PCBs,
  - (ii) electrical, heat transfer or hydraulic equipment or a vapour diffusion pump that is being put to the use for which it was originally designed or is being stored for such use by a person who uses such equipment for the purpose for which it was originally designed, or
  - (iii) machinery or equipment referred to in subclause (c) (i), or
- (c) PCB liquid that,
  - (i) is at the site of fixed machinery or equipment, the operation of which is intended to destroy the chemical structure of PCBs by using the PCBs as a source of fuel or chlorine for purposes other than the destruction of PCBs or other wastes and that is subject to an environmental compliance approval issued in respect of an activity mentioned in subsection 9 (1) of the Act after the 1st day of January, 1981 specifying the manner in which PCB liquid be processed in the machinery or equipment, or
  - (ii) is in PCB equipment referred to in subclause (b) (ii). (“déchets de BPC”) R.R.O. 1990, Reg. 362, s. 1; O. Reg. 232/11, s. 1.

2. PCB waste is designated as a waste. R.R.O. 1990, Reg. 362, s. 2.

3. (1) Every site containing PCB waste and PCB related waste but not containing other wastes is classified as a PCB waste disposal site. R.R.O. 1990, Reg. 362, s. 3 (1).

(2) In subsection (1),

“PCB related waste” means waste containing low levels of PCBs or waste arising from a spill or clean up of PCB liquid or PCB waste. R.R.O. 1990, Reg. 362, s. 3 (2).

4. (1) Every operator of a waste disposal site shall keep records of all PCB waste held by the operator after the 15th day of January, 1982. R.R.O. 1990, Reg. 362, s. 4 (1).

(2) The records referred to in subsection (1) shall include,

- (a) the methods and times at which the PCB waste is received and delivered to and from the site; and

(b) where PCB waste is transported to and from the site, the location from or to which it is transported and the person by whom it is transported,

with respect to any delivery, receipt or transport of PCB waste after the 15th day of January, 1982, and,

(c) a description of the nature and quantities of the PCB waste;

(d) the location of the waste disposal site; and

(e) the methods of storage of the PCB waste,

with respect to all PCB wastes at the waste disposal site. R.R.O. 1990, Reg. 362, s. 4 (2).

(2), (3) Every operator of a waste disposal site shall report to the Director the information required to be recorded under subsection (2),

(a) by telephone immediately, and in writing within three days, after a PCB waste first comes on the site; and

(b) in writing within thirty days after any other PCB waste is taken to or from the site. R.R.O. 1990, Reg. 362, s. 4 (3).

(4) A record of a PCB waste transfer submitted to the Ministry under section 23, 24 or 25 of Regulation 347 of the Revised Regulations of Ontario, 1990 satisfies the requirements of clauses (2) (b), (c) and (d) with respect to the PCB waste referred to in that record. R.R.O. 1990, Reg. 362, s. 4 (4).

**1. Subclause (c) (i) of the definition of “PCB waste” in section 1 of Regulation 362 of the Revised Regulations of Ontario, 1990 is amended by striking out “with respect to which a certificate of approval has been issued under section 9” and substituting “that is subject to an environmental compliance approval issued in respect of an activity mentioned in subsection 9 (1)”**

### **3.8 OZONE DEPLETING SUBSTANCES ONTARIO REGULATION 463/10 -**

#### **OZONE DEPLETING SUBSTANCES AND OTHER HALOCARBONS, December 7, 2010**

\* for complete Ozone Depleting Substances information, see ONTARIO REGULATION 463/10

#### **Transfer, transport, storage or disposal of ozone depleting substances as waste**

**38.** (1) Nothing in this Regulation prohibits the transfer or transport of a class 1 ozone depleting substance or class 2 ozone depleting substance that is waste or any thing that contains a class 1 ozone depleting substance or class 2 ozone depleting substance that is waste to or by a waste management system or to or from a waste disposal site as permitted under the Act.

(2) Nothing in this Regulation prohibits the storage or disposal of a class 1 ozone depleting substance or class 2 ozone depleting substance that is waste or any thing that contains a class 1 ozone depleting substance or class 2 ozone depleting substance that is waste at a waste disposal site as permitted under the Act.

#### **Disposal of fire extinguishing equipment and containers**

**39.** (1) A person shall not dismantle, destroy, recycle, incinerate or dispose of by depositing in a dump or landfilling site fire extinguishing equipment that is designed to contain halon in a quantity of more than three kilograms unless a notice has been affixed to the equipment under section 12 and the equipment is dismantled, destroyed, recycled, incinerated or disposed of by depositing in a dump or landfilling site in a manner authorized under the Act.

(2) A person shall not dismantle, destroy, recycle, incinerate or dispose of by depositing in a dump or landfilling site a container referred to in section 11 unless a notice has been affixed to the container under section 12 and the container is dismantled, destroyed, recycled, incinerated or disposed of by depositing in a dump or landfilling site in a manner authorized under the Act.

#### **Disposal of portable fire extinguisher designed to contain less than three kilograms of halon**

**40.** A person may dismantle, destroy, recycle, incinerate or dispose of by depositing in a dump or landfilling site a portable fire extinguisher designed to contain halon in a quantity of three kilograms or less in a manner authorized under the Act.

#### **Disposal of refrigeration equipment and containers**

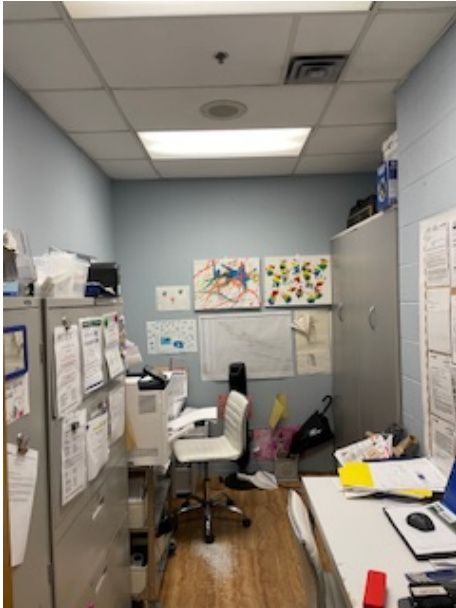
**41.** (1) A person shall not dismantle, destroy, recycle, incinerate or dispose of by depositing in a dump or landfilling site refrigeration equipment or a container that has contained a refrigerant unless a notice has been affixed to the equipment or container under section 32 and the equipment or container is dismantled, destroyed, recycled, incinerated or disposed of by depositing in a dump or landfilling site in a manner authorized under the Act.

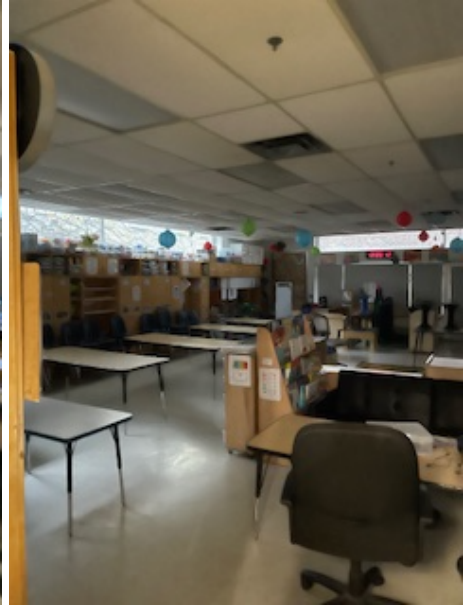
(2) This section does not apply to dismantling that takes place in the course of the manufacture of a product that is or that contains refrigeration equipment.

## 4.0 OBSERVATIONS

### Site Observations:

On **April 27, 2024**, at the time of our inspection and sampling, the following observations were noted:  
\*for detailed findings and lab analysis see section 6.0 and Appendix A and B.





#### 4.1 Asbestos

As it pertains to asbestos, a total of **24 representative samples** were taken.

**No asbestos detected.**

#### 4.2 Lead

As it pertains to lead in paint, three representative paint chip samples were taken.

**On the main floor, a representative sample was taken from the drywall wall paint (M001-LP) and contains 9 PPM.**

**On the main floor, a representative sample was taken from the block wall paint (M002-LP) and contains <5 PPM.**

**On the main floor, a representative sample was taken from the door trim paint (M003-LP) and contains 10 PPM.**

#### 4.3 Mercury

Mercury containing thermostat was not noted at the time of inspection. Any florescent bulbs may contain mercury.

#### 4.4 Silica

**Regarding silica, areas of concern both indoors and outdoors include concrete patio stones, asphalt, brick, cinder block, mortar, and concrete. Additionally, silica may be present in ceramic and stone materials commonly found in washrooms, kitchens, and surrounding fireplaces.**

#### 4.5 Benzene

As it pertains to benzene, no benzene contain substances were noted at the time of inspection. (i.e. oil storage tank).

#### 4.6 Polychlorinated Biphenyls (PCBs)

As it pertains to PCBs, light ballasts may contain PCBs.

#### 4.7 Ozone Depleting Substances

As it pertains to ozone depleting substances, no indoor air conditioning unit were noted at the time of testing. Any air conditioning units contain refrigerant. No other refrigerant containing materials were noted at the time of inspection.

## 5.0 TESTING CRITERIA

### 5.1 Asbestos

Ontario Regulation 278/05 outlines the definition, application and requirements for asbestos containing material and asbestos containing buildings in Ontario. This regulation also outlines the requirements for management, handling and testing of asbestos containing material (ACM).

According to O. Reg 278/05 “**asbestos-containing material**” means material that contains 0.5 per cent or more asbestos by dry weight. “Friable (asbestos containing) material” means material that, (a) when dry, can be crumbled, pulverized or powdered by hand pressure, or (b) is crumbled, pulverized or powdered. Friable asbestos containing material is considered to be more dangerous than non-friable asbestos containing material.

O. Reg 278/05 bulk material samples chart (below) indicated the number of required samples.

### BULK MATERIAL SAMPLES

*\*Table taken from Ontario Regulation 278/05, Subsection 3 (3)*

Item	Type of material	Size of area of homogeneous material	Minimum number of bulk material samples to be collected
1	Surfacing material, including without limitation material that is applied to surfaces by spraying, by troweling or otherwise, such as acoustical plaster on ceilings and fireproofing materials on structural members	Less than 90 square metres	3
		90 or more square metres, but less than 450 square metres	5
		450 or more square metres	7
2	Thermal insulation, except as described in item 3	Any size	3
3	Thermal insulation patch	Less than 2 linear metres or 0.5 square metres	1
4	Other material	Any size	3



## 5.2 Lead

### ONTARIO REGULATION - MINISTRY OF LABOUR GUIDELINE - LEAD ON CONSTRUCTION PROJECTS

The Ministry of Labour (MOL) currently does not have criteria for the classification of lead-based paint. Therefore, under these circumstances, The Healthy Abode Inc. considers all painted surfaces with any detectable presence of lead to be lead containing.

Ontario Regulation 490/09 specifies the occupational exposure limit (OEL) for elemental lead at 0.05 mg/m<sup>3</sup> calculated as an 8 hour/daily and a 40 hour/weekly time-weighted average (TWA) limit. Despite the fact that O. Reg 490/09 does not generally apply to a construction project, employers still have a general duty and responsibility under Part III, Section 25(2)(h) of the Act to protect workers. Thus, if the contracted personnel retained to conduct the work are required to perform operations where significant levels of airborne dust containing lead may be generated, then measures must be taken by the contractor to ensure that the OEL for lead is not exceeded and that all reasonable regulatory and health and safety precautions are taken. The MOL Guideline, Lead on Construction Projects, provides a classification system to assist with determining the required control measures necessary, based on the proposed weekly activity.

### EACO Lead Guideline For Construction, Renovation, Maintenance or Repair, Oct 2014

#### 5.3 “De minimis” or “virtually safe” Lead Level of Paints and Coatings

For the purpose of this guideline:

- Paints or surface coatings containing less than or equal to 0.1% lead by weight (1000 PPM) are considered low-level lead paints or surface coatings. If these materials (and the surfaces to which they are applied) are disturbed in a non-aggressive manner, performed using normal dust control procedures and are completed so that the TWA for PNOS is not exceeded, then worker protection from the inhalation of lead is not required. General health and safety precautions must still be implemented.
- Paints or surface coatings containing greater than 0.1% lead by weight (1000 PPM) but less than 0.5% lead by weight (5000 PPM) are considered lead-containing paints or surface coatings. Tasks performed that disturb these materials must be completed in accordance with the Classifications of Work Operations (in Section 7) and corresponding procedures (in Section 8). Alternatively, a hygiene or exposure assessment can be performed to determine procedures that are required.
- Regardless of lead content in paints or surface coatings, tasks that create an aggressive disturbance of coatings such as torching/welding, abrasive blasting must always be completed in accordance with the procedures listed in the Classifications of Work Operations (in Section 7) and corresponding procedures (in Section 8). Alternatively, a hygiene or exposure assessment can be performed to determine procedures that are required.
- Construction operations involving lead-based paints or surface coatings (i.e concentrations equal to or greater than 0.5% lead by weight (5000 PPM)) must always be completed in accordance with the procedures listed in the Classifications of Work Operations (in Section 7) and corresponding procedures (in Section 8). Alternatively, a hygiene or exposure assessment can be performed to determine procedures that are required.

### CANADIAN SURFACE COATING MATERIALS REGULATIONS (SOR/2016-193)

According to the Canadian Surface Coating Materials Regulations (SOR/2016-193), *Lead content and test method 2 (1) A surface coating material must not contain more than 90 mg/kg total lead when a dried sample is tested in accordance with a method that conforms to good laboratory practices.* NOTE: regarding unit of measurement, 1 milligram/kilogram (mg/kg) = 1 parts per million (PPM.)

### United States, Environmental Protection Agency, EPA - RRP

The Environmental Protection Agency (EPA) in the United States considers <0.5% or <5000 parts per million to be a safe level of lead in paint.



## 6.0 LABORATORY SAMPLING RESULTS

### 6.1 Asbestos

Total: 24 samples (stop positive placed on laboratory report)

For reference for findings see - Appendix A & C- attached report from PARACEL - COC No: 2418032 & 2418329

Material Quantity is approximate.

Condition: Good, Average or Poor

Access: High: accessible to anyone; Mod: accessible with a ladder only; Low: enclosed in a building material

Sample #	Sample Quantity	Location	Material	Material Quantity	Condition	Friable Y/N	Access	% of Asbestos and Type
M001, M002, M003-AB	1/3, 2/3, 3/3	Main floor - representative, inc. kitchen, bathroom girls, bathroom boys	Drywall joint compound	<1000 ft2	avg	Y	high	None detected
M004, M005, M006-AB	1/3, 2/3, 3/3	Main floor - representative	Acoustic ceiling tiles	<5000 ft2	avg	Y	mod	None detected
M007, M008, M009-AB	1/3, 2/3, 3/3	Main floor - representative	Cinder block	<5000 ft2	avg	Y	high	None detected
M010, M011, M012-AB	1/3, 2/3, 3/3	Main floor - representative, inc. pre-school class #1, #2, #3	VCT floor tile - beige	<1000 ft2	avg	N	high	None detected
M013, M014, M015-AB	1/3, 2/3, 3/3	Main floor - representative, inc. pre-school class #1, #2, #3	Mastic adhesive	<1000 ft2	avg	N/Y	low	None detected
M016, M017, M018-AB	1/3, 2/3, 3/3	Main floor - kitchen	VCT floor tile - grey	<1000 ft2	avg	N	high	None detected
B019, B020, B021-AB	1/3, 2/3, 3/3	Basement - parking garage, level #1 ceiling	Spray insulation	<1000 ft2	avg	Y	mod	None detected
B022, B023, B024-AB	1/3, 2/3, 3/3	Basement - parking garage, level #1 ceiling	Oldest layer, insulation	<1000 ft2	avg	Y	low	None detected

## 6.2 Lead (in paint)

Total: 3 samples

For reference for findings see - Appendix B - attached report from PARACEL - Chain of Custody Number: 2418055  
 Material Quantity is approximate.  
 Condition: Good, Average or Poor

Access: High: accessible to anyone; Mod: accessible with a ladder only; Low: enclosed in a building material

Sample #	Location	Material	Material Quantity	Condition	Access	Quantity of Lead Paint
M001-LP	Main floor - representative, inc. kitchen	Drywall wall paint	<1000 ft2	avg	high	9 PPM
M002-LP	Main floor - representative	Block wall paint	<1000 ft2	avg	high	<5 PPM
M003-LP	Main floor - representative, inc. Classroom #3	Trim paint	<100 linear feet	avg	high	10 PPM

## 7.0 DISCUSSION & CONCLUSIONS

Under the *Occupational Health and Safety Act*, in accordance with ONTARIO REGULATION 490/09 DESIGNATED SUBSTANCES at the present time there are eleven (11) designated substances. Of the eleven (11) designated substances, two (2) have been deemed applicable to St. Lawrence Co-Op Daycare - 230 The Esplanade, Toronto, ON., M5A 4J6. The two (2) designated substances that have been deemed applicable are Lead, and Silica.

In addition to these above mentioned designated substances this survey also noted the presence or potential presence of both Polychlorinated Biphenyls (PCBs) and Ozone Depleting Substances.

Of the additional designated substances, namely, mercury, benzene, acrylonitrile, arsenic, coke oven emissions, ethylene oxide, isocyanates and vinyl chloride regulated under O. Reg 490/09, none of these materials were expected to constitute significant components and/or portions of building materials and/or architectural finishes observed on site.

### Asbestos

Of the **24 samples** collected for the purpose of detecting asbestos containing materials, 0 types of materials contain asbestos.

**- NOTE: There may be asbestos duct wrap on the inner wall HVAC duct runs / there may be asbestos boot wrap on forced air registers. If duct wrap / boot wrap is noted, it is considered friable. Removal is considered either a type 2 (<1m<sup>2</sup>, O. Reg 278/05, s.12 (3).2.) or type 3 (>1m<sup>2</sup>, O. Reg 278/05, s.12 (4).1.) asbestos operation depending on quantity and removal method. If the material will not be removed, but enclosed instead it is considered a type 2 operation, O. Reg 278/05, s.12 (3).3.**

If suspected asbestos-containing materials not identified in this report are encountered during demolition activities, the work should stop immediately and the material tested to confirm the presence or absence of asbestos. This would be executed in order to provide recommendations on the applicable work procedures as prescribed under O. Reg 278/05. O. Reg 278/05 must be followed for the removal of asbestos containing material

### Lead

**As it pertains to lead in paint, three representative paint chip samples were taken.**

**On the main floor, a representative sample was taken from the drywall wall paint (M001-LP) and contains 9 PPM.**

**On the main floor, a representative sample was taken from the block wall paint (M002-LP) and contains <5 PPM.**

**On the main floor, a representative sample was taken from the door trim paint (M003-LP) and contains 10 PPM.**

The Ministry of Labour (MOL) currently does not have criteria for the classification of lead-based paint. Therefore, under these circumstances, The Healthy Abode Inc. considers all painted surfaces with any detectable presence of lead to be lead containing.

According to EACO Lead Guideline For Construction, Renovation, Maintenance or Repair, Oct 2014

5.3 "De minimis" or "virtually safe" Lead Level of Paints and Coatings

For the purpose of this guideline:

- Paints or surface coatings containing less than or equal to 0.1% lead by weight (1000 PPM) are considered low-level lead paints or surface coatings. If these materials (and the surfaces to which they are applied) are disturbed in a non-aggressive manner, performed using normal dust control procedures and are completed so that the TWA for PNOS is not exceeded, then worker protection from the inhalation of lead is not required. General health and safety precautions must still be implemented.
- Paints or surface coatings containing greater than 0.1% lead by weight (1000 PPM) but less than 0.5% lead by weight (5000 PPM) are considered lead-containing paints or surface coatings. Tasks performed that disturb these materials must be completed in accordance with the Classifications of Work Operations (in Section 7) and corresponding procedures (in Section 8). Alternatively, a hygiene or exposure assessment can be performed to determine procedures that are required.
- Regardless of lead content in paints or surface coatings, tasks that create an aggressive disturbance of coatings such as torching/welding, abrasive blasting must always be completed in accordance with the procedures listed in the Classifications of Work Operations (in Section 7) and corresponding procedures (in Section 8). Alternatively, a hygiene or exposure assessment can be performed to determine procedures that are required.
- Construction operations involving lead-based paints or surface coatings (i.e concentrations equal to or greater than 0.5% lead by weight (5000 PPM)) must always be completed in accordance with the procedures listed in the Classifications of

Work Operations (in Section 7) and corresponding procedures (in Section 8). Alternatively, a hygiene or exposure assessment can be performed to determine procedures that are required.

According to the Canadian Surface Coating Materials Regulations (SOR/2016-193), *Lead content and test method 2 (1) A surface coating material must not contain more than 90 mg/kg total lead when a dried sample is tested in accordance with a method that conforms to good laboratory practices.* NOTE: regarding unit of measurement, 1 milligram/kilogram (mg/kg) = 1 parts per million (PPM.)

The Environmental Protection Agency (EPA) in the United States considers <0.5% or <5000 parts per million to be a safe level of lead in paint.

MOL Guideline, Lead on Construction Projects, provides a classification system to assist with determining the required control measures necessary, based on the proposed weekly activity.

There is a possibility that lead-containing solder is present on domestic water pipes in the building. During demolition or demolition activities, inaccessible lead-containing materials may be uncovered. All bulk lead-containing materials should be extracted and sent to a recycling facility. If the recycling of the lead is not practical then it must be disposed of in an approved landfill as lead waste.

### **Mercury**

Mercury containing thermostat was not noted at the time of inspection. Any fluorescent bulbs may contain mercury.

### **Silica**

**Regarding silica, areas of concern both indoors and outdoors include concrete patio stones, asphalt, brick, cinder block, mortar, and concrete. Additionally, silica may be present in ceramic and stone materials commonly found in washrooms, kitchens, and surrounding fireplaces.**

### **Benzene**

As it pertains to benzene, no benzene containing substances were noted at the time of inspection. (i.e. oil storage tank).

### **Polychlorinated Biphenyls (PCBs)**

As it pertains to PCBs, light ballasts may contain PCBs.

### **Ozone Depleting Substances**

As it pertains to ozone depleting substances, an indoor air conditioning unit was not at the time of testing. Any air conditioning units contain refrigerant. No other refrigerant containing materials were noted at the time of inspection.

## 8.0 RECOMMENDATIONS

The [Occupational Health and Safety Act](#) (OHSA) sets out, in very general terms, the duties of employers and others to protect workers from health and safety hazards on the job. These duties include:

- taking all reasonable precautions to protect the health and safety of workers [clause 25(2)(h)]
- ensuring that equipment, materials and protective equipment are maintained in good condition [clause 25(1)(b)]
- providing information, instruction and supervision to protect worker health and safety [clause 25(2)(a)]
- acquainting a worker or a person in authority over a worker with any hazard in the work and in the handling, storage, use, disposal and transport of any article, device, equipment or a biological, chemical or physical agent [clause 25(2)(d)].

As it pertains specifically to Asbestos, Lead, Mercury, Silica and Benzene, all five of these substances are regulated by Ontario Regulation 490/09 - Designated Substances. In addition to O. Reg 490/09, the specific Ontario Guidelines, Regulations and Requirements are listed below:

- \* Ontario Occupational Health and Safety Act, *Ontario Regulation 278/05 Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations*
- \* Ontario Ministry of Labour - *Guideline: Lead on Construction Projects*
- \* Note: The measures and procedures in the Ministry of Labour *Guideline - Lead in Construction Projects* for control of exposure of lead from paint applications during construction activities will also serve to control potential exposure to mercury in paint
- \* Canadian Surface Coating Materials Regulations (SOR/2016-193) (lead and mercury)
- \* EACO Lead Guideline For Construction, Renovation, Maintenance or Repair, Oct 2014
- \* Ontario Ministry of Labour *Guideline: Silica on Construction Projects*
- \* Benzene, Amending Reg. 839 of R.R.O. 1990, Ministry of Labour - Current Occupational Exposure Limits, REG 833
- \* For Waste: Ontario Regulation 347 - *Waste Management General* is to be followed

For Polychlorinated Biphenyls (PCBs) and Ozone Depleting Substances the specific Ontario Guidelines, Regulations and Requirements are listed below:

- \* ONTARIO REGULATION 232/11, AMENDING REG. 362 OF R.R.O. 1990
- \* ONTARIO REGULATION 463/10 - OZONE DEPLETING SUBSTANCES AND OTHER HALOCARBONS, December 7, 2010

It is recommended that you have these documents on site for reference and follow all necessary and outlined procedures and protocols.

## Certificate of Analysis

**The Healthy Abode Inc.**

151 Bowie Avenue  
Toronto, ON M6E 2R1  
Attn: Angelina Sampieri

Client PO: 230 Esplanade, Toronto, ON M5A 4J6  
Project: 24-3029-DSS  
Custody: 75011 74992

Report Date: 2-May-2024  
Order Date: 29-Apr-2024

**Order #: 2418032**

This Certificate of Analysis contains analytical data applicable to the following samples as submitted :

Parcel ID	Client ID
2418032-01	M001
2418032-02	M002
2418032-03	M003
2418032-04	M004
2418032-05	M005
2418032-06	M006
2418032-07	M007
2418032-08	M008
2418032-09	M009
2418032-10	M010
2418032-11	M011
2418032-12	M012
2418032-13	M013
2418032-14	M014
2418032-15	M015
2418032-16	M016
2418032-17	M017
2418032-18	M018

Approved By:



Emma Diaz

Senior Analyst

Certificate of Analysis  
 Client: **The Healthy Abode Inc.**  
 Client PO: **230 Esplanade, Toronto, ON M5A 4J6**

Report Date: 02-May-2024  
 Order Date: 29-Apr-2024  
 Project Description: **24-3029-DSS**

**Asbestos, PLM Visual Estimation    \*\*MDL - 0.5%\*\***

Parcel ID	Sample Date	Friability	Colour	Description	Asbestos Detected	Material Identification	% Content	
2418032-01	27-Apr-24	Friable	White	Drywall Joint Compound	No	<b>Client ID: M001</b>		
							Non-Fibers	100
<i>Comments:</i>								
2418032-02	27-Apr-24	Friable	White	Drywall Joint Compound	No	<b>Client ID: M002</b>		
							Non-Fibers	100
<i>Comments:</i>								
2418032-03	27-Apr-24	Friable	White	Drywall Joint Compound	No	<b>Client ID: M003</b>		
							Non-Fibers	100
<i>Comments:</i>								
2418032-04	27-Apr-24	Friable	Grey	Ceiling Tile	No	<b>Client ID: M004</b>		
							Cellulose	40
							MMVF	30
							Non-Fibers	30
<i>Comments:</i>								
2418032-05	27-Apr-24	Friable	Grey	Ceiling Tile	No	<b>Client ID: M005</b>		
							Cellulose	40
							MMVF	30
							Non-Fibers	30
<i>Comments:</i>								
2418032-06	27-Apr-24	Friable	Grey	Ceiling Tile	No	<b>Client ID: M006</b>		
							Cellulose	40
							MMVF	30
							Non-Fibers	30
<i>Comments:</i>								
2418032-07	27-Apr-24	Friable	Grey	Cinder Block	No	<b>Client ID: M007</b>		
							Non-Fibers	100
<i>Comments:</i>								



Certificate of Analysis  
 Client: The Healthy Abode Inc.  
 Client PO: 230 Esplanade, Toronto, ON M5A 4J6

Report Date: 02-May-2024  
 Order Date: 29-Apr-2024  
 Project Description: 24-3029-DSS

**Asbestos, PLM Visual Estimation    \*\*MDL - 0.5%\*\***

Parcel ID	Sample Date	Friability	Colour	Description	Asbestos Detected	Material Identification	% Content
2418032-08	27-Apr-24	Friable	Grey	Cinder Block	No	<b>Client ID: M008</b>	
						Non-Fibers	100
<i>Comments:</i>							
2418032-09	27-Apr-24	Friable	Grey	Cinder Block	No	<b>Client ID: M009</b>	
						Non-Fibers	100
<i>Comments:</i>							
2418032-10	27-Apr-24	Non-Friable	Beige	Tile	No	<b>Client ID: M010</b>	
						Non-Fibers	100
<i>Comments:</i>							
2418032-11	27-Apr-24	Non-Friable	Beige	Tile	No	<b>Client ID: M011</b>	
						Non-Fibers	100
<i>Comments:</i>							
2418032-12	27-Apr-24	Non-Friable	Beige	Tile	No	<b>Client ID: M012</b>	
						Non-Fibers	100
<i>Comments:</i>							
2418032-13	27-Apr-24	Non-Friable	Yellow	Mastic	No	<b>Client ID: M013</b>	
						Non-Fibers	100
<i>Comments:</i>							
2418032-14	27-Apr-24	Non-Friable	Yellow	Mastic	No	<b>Client ID: M014</b>	
						Non-Fibers	100
<i>Comments:</i>							
2418032-15	27-Apr-24	Non-Friable	Yellow	Mastic	No	<b>Client ID: M015</b>	
						not analyzed	
<i>Comments: *All three mastic samples in 1 bag. Not enough material left.</i>							
2418032-16	27-Apr-24	Non-Friable	Grey	Tile	No	<b>Client ID: M016</b>	
						Non-Fibers	100

Certificate of Analysis  
 Client: **The Healthy Abode Inc.**  
 Client PO: **230 Esplanade, Toronto, ON M5A 4J6**

Report Date: 02-May-2024  
 Order Date: 29-Apr-2024  
 Project Description: **24-3029-DSS**

**Asbestos, PLM Visual Estimation    \*\*MDL - 0.5%\*\***

Parcel ID	Sample Date	Friability	Colour	Description	Asbestos Detected	Material Identification	% Content
<i>Comments:</i>							
2418032-17	27-Apr-24	Non-Friable	Grey	Tile	No	Client ID: M017 Non-Fibers	100
<i>Comments:</i>							
2418032-18	27-Apr-24	Non-Friable	Grey	Tile	No	Client ID: M018 Non-Fibers	100
<i>Comments:</i>							

\* MMVF: Man Made Vitreous Fibers: Fiberglass, Mineral Wool, Rockwool, Glasswool

**Analysis Summary Table**

Analysis	Method Reference/Description	Lab Location	Lab Accreditation	Analysis Date
Asbestos, PLM Visual Estimation	AppE to SubE of 40CFR Part763 and EPA/600/R-93/116	1 - Mississauga	CALA 3762	2-May-24

Mississauga Lab: 15 - 6800 Kitimat Rd Mississauga, Ontario, L5N 5M1

**Qualifier Notes**

Sample Qualifiers :

- AS-IM-CA: Insufficient material, analysed per client request. Analysing less material than recommended by the reference method may or may not limit the sensitivity and reliability of quantitation.
- AS-IM-NA: Insufficient material, not analysed. Analysing less material than recommended by the reference method may or may not limit the sensitivity and reliability of quantitation.

**Work Order Revisions | Comments**

None



Client Name: \_\_\_\_\_  
 Contact Name: *the healthy abode* The Healthy Abode Inc.  
 Address: 151 Bowie Ave. Toronto, ON  
 M1E 2R1  
 647-889-2254  
 angelina@thehealthyabode.ca  
 Telephone: \_\_\_\_\_

Project Reference: *24-3029 - PSS*  
 Quote #: *230 Esplanade*  
 PO #: *Toronto ON*  
 Email Address: *MSA 4J6*

Turnaround Time:  
 Immediate     1 Day  
 4 Hour         2 Day  
 8 Hour         3 Day  
 Regular  
 Date Required: \_\_\_\_\_

**ASBESTOS & MOLD ANALYSIS**

Matrix:  Air  Bulk  Tape Lift  Swab  Other  
 Regulatory Guideline:  ON  QC  AB  SK  Other:  
 Analyses:  Microscopic Mold  Culturable Mold  Bacteria GRAM  PCM Asbestos  PLM Asbestos  Chatfield Asbestos  TEM Asbestos

Parcel Order Number: <i>2418032</i>		Asbestos - Bulk				
Sample ID	Sampling Date	Air Volume (L)	Analysis Required	Identify Distinct Building Materials to Be Analyzed (if not specified, all materials identified will be analyzed) *	Positive Stop?	
1 <i>m001</i>	<i>Apr 27/24</i>		<i>DC</i>	<i>main kitchen Drywall wall</i>	<i>1/3</i> <input type="checkbox"/>	
2 <i>m002</i>			<i>↓</i>	<i>" Bath Girls " Ceiling</i>	<i>2/3</i> <input type="checkbox"/>	
3 <i>m003</i>			<i>↓</i>	<i>" " Boys " "</i>	<i>3/3</i> <input type="checkbox"/>	
4 <i>m004</i>			<i>HA</i>	<i>main throughout Acoustic Ceiling tile</i>	<i>1/3</i> <input type="checkbox"/>	
5 <i>m005</i>			<i>↓</i>	<i>" " " "</i>	<i>2/3</i> <input type="checkbox"/>	
6 <i>m006</i>			<i>HA</i>	<i>main throughout <del>Cinder Block</del> " "</i>	<i>1/3</i> <input type="checkbox"/>	
7 <i>m007</i>			<i>↓</i>	<i>" " " "</i>	<i>2/3</i> <input type="checkbox"/>	
8 <i>m008</i>			<i>↓</i>	<i>" " " "</i>	<i>3/3</i> <input type="checkbox"/>	
9 <i>m009</i>			<i>file</i>	<i>main Preschool Class #1 VCT tile Floor</i>	<i>1/3</i> <input type="checkbox"/>	
10 <i>m010</i>			<i>↓</i>	<i>" " " " tile " " "</i>	<i>2/3</i> <input type="checkbox"/>	
11 <i>m011</i>			<i>↓</i>	<i>" " " " tile " " "</i>	<i>3/3</i> <input type="checkbox"/>	
12 <i>m012</i>						

\* If left blank, all distinct materials identified in the samples will be analyzed and reported separately as per EPA 600/R-93/116. Additional charges will apply.

Comments: *HA HOMOGENIZE ALL*

Method of Delivery: *United*

Relinquished By (Sign): \_\_\_\_\_ Received at Depot: *JR* Received at Lab: *JR* Verified By: \_\_\_\_\_  
 Relinquished By (Print): \_\_\_\_\_ Date/Time: *Apr 29/24* Date/Time: *Apr 29/24*  
 Date/Time: \_\_\_\_\_ Date/Time: *8:00* *10:55*



Client Name:	Project Reference: <b>24-3029-DSS</b>	<b>Turnaround Time:</b> <input type="checkbox"/> Immediate <input type="checkbox"/> 1 Day <input type="checkbox"/> 4 Hour <input type="checkbox"/> 2 Day <input type="checkbox"/> 8 Hour <input checked="" type="checkbox"/> 5 Day <input type="checkbox"/> Regular
Contact Name: <i>the healthy abode</i> The Healthy Abode Inc. 151 Bowline Ave. Toronto, ON, M5E 2R1 647-889-2254 angelina@thehealthyabode.ca	Quote #: <b>230 Esplanade</b>	
Address:	PO #: <b>Toronto ON</b>	
Telephone:	Email Address: <b>MSA 436</b>	
Date Required: _____		

**ASBESTOS & MOLD ANALYSIS**

Matrix:  Air  Bulk  Tape Lift  Swab  Other    Regulatory Guideline:  ON  QC  AB  SK  Other:

Analyses:  Microscopic Mold  Culturable Mold  Bacteria GRAM  PCM Asbestos  PLM Asbestos  Chatfield Asbestos  TEM Asbestos

Sample ID	Sampling Date	Air Volume (L)	Analysis Required	Asbestos - Bulk	
				Identify Distinct Building Materials to Be Analyzed (if not specified, all materials identified will be analyzed) *	Positive Stop?
1 M013	Apr 27/24		mastic	Main Preschool Classroom VCT mastic	<input checked="" type="checkbox"/>
2 M014			↓	" " " #2 " "	<input checked="" type="checkbox"/>
3 M015			↓	" " " #3 " "	<input checked="" type="checkbox"/>
4 M016			tile	Main Kitchen VCT tile Grey	<input checked="" type="checkbox"/>
5 M017			↓	" " " " "	<input checked="" type="checkbox"/>
6 M018					<input type="checkbox"/>
7					<input type="checkbox"/>
8					<input type="checkbox"/>
9					<input type="checkbox"/>
10					<input type="checkbox"/>
11					<input type="checkbox"/>
12					<input type="checkbox"/>

\* If left blank, all distinct materials identified in the samples will be analyzed and reported separately as per EPA 600/R-93/116. Additional charges will apply.

Comments: **HA HOMOGENIZED**      Method of Delivery: **United**

Relinquished By (Sign):	Received at Depot:	Received at Lab:	Verified By:
Relinquished By (Print):	Date/Time:	Date/Time: <b>Apr 29/24</b>	Date/Time: <b>Apr 29/24</b>
Date/Time:		<b>8:00</b>	<b>10:55</b>

## Certificate of Analysis

**The Healthy Abode Inc.**

151 Bowie Avenue  
Toronto, ON M6E 2R1  
Attn: Angelina Sampieri

Client PO: 230 Esplanade, Toronto, ON M5A 4J6  
Project: 24-3029-DSS  
Custody: 72377

Report Date: 1-May-2024  
Order Date: 29-Apr-2024

**Order #: 2418055**

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Parcel ID	Client ID
2418055-01	M001 Main Kitchen Drywall Paint
2418055-02	M002 Main Throughout Block Paint
2418055-03	M003 Main Classroom #3 Poor Wood Paint

Approved By:



Milan Ralitsch, PhD  
Senior Technical Manager

Any use of these results implies your agreement that our total liability in connection with this work, however arising shall be limited to the amount paid by you for this work, and that our employees or agents shall not under circumstances be liable to you in connection with this work

Certificate of Analysis

Report Date: 01-May-2024

Client: **The Healthy Abode Inc.**

Order Date: 29-Apr-2024

Client PO: 230 Esplanade, Toronto, ON M5A 4J6

Project Description: 24-3029-DSS

**Analysis Summary Table**

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Metals, ICP-MS	EPA 6020 - Digestion - ICP-MS	30-Apr-24	30-Apr-24

**Qualifier Notes:**

None

**Sample Data Revisions**

None

**Work Order Revisions/Comments:**

None

**Other Report Notes:**

n/a: not applicable

ND: Not Detected

MDL: Method Detection Limit

Source Result: Data used as source for matrix and duplicate samples

%REC: Percent recovery.

RPD: Relative percent difference.

Certificate of Analysis

Report Date: 01-May-2024

Client: The Healthy Abode Inc.

Order Date: 29-Apr-2024

Client PO: 230 Esplanade, Toronto, ON M5A 4J6

Project Description: 24-3029-DSS

### Sample Results

Lead					Matrix: Paint	
Parcel ID	Client ID	Sample Date	Units	MDL	Result	
2418055-01	M001 Main Kitchen Drywall Paint	26-Apr-24	ug/g	5	9	
2418055-02	M002 Main Throughout Block Paint	26-Apr-24	ug/g	5	<5	
2418055-03	M003 Main Classroom #3 Poor Wood Paint	26-Apr-24	ug/g	5	10	

### Laboratory Internal QA/QC

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Matrix Blank</b>									
Lead	ND	5	ug/g						
<b>Matrix Duplicate</b>									
Lead	ND	5	ug/g	ND			NC	50	
<b>Matrix Spike</b>									
Lead	52.6	5.00	ug/g	ND	105	70-130			



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p: 1-8  
e: par  
www.

**Paracel ID: 2418055**



Chain Of Custody  
(Lab Use Only)

No 72377

Client Name:	Project Ref: <u>24-3029 -1055</u>	Page <u>1</u> of <u>1</u>
Contact Name: <u>healthy abode</u> The Healthy Abode Inc.	Quote #: <u>230 Esplanade</u>	Turnaround Time <input type="checkbox"/> 1 day <input checked="" type="checkbox"/> 3 day <input type="checkbox"/> 2 day <input type="checkbox"/> Regular Date Required: _____
Address: 504 Bloor Ave. Toronto, ON M5E 2R1 647-889-2254 angelina@thehealthyabode.ca	PO #: <u>Toronto ON</u>	
Telephone:	E-mail: <u>MSA 4J6</u>	

<input type="checkbox"/> REG 153/04 <input type="checkbox"/> REG 406/19    Other Regulation <input type="checkbox"/> Table 1 <input type="checkbox"/> Res/Park <input type="checkbox"/> Med/Fine <input type="checkbox"/> REG 558 <input type="checkbox"/> PWQO <input type="checkbox"/> Table 2 <input type="checkbox"/> Ind/Comm <input type="checkbox"/> Coarse <input type="checkbox"/> CCME <input type="checkbox"/> MISA <input type="checkbox"/> Table 3 <input type="checkbox"/> Agri/Other <input type="checkbox"/> Table _____ For RSC: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Other: _____ Mun: _____		Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)		Required Analysis																	
Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken		Lead															
				Date	Time																
1						✓	Grey														
2						✓	White														
3						✓	Grey														
4																					
5																					
6																					
7																					
8																					
9																					
10																					

Comments: \_\_\_\_\_ Method of Delivery: Union

Relinquished By (Sign): <u>[Signature]</u>	Received at Depot: <u>GR</u>	Received at Lab: <u>C-114</u>	Verified By: <u>[Signature]</u>
Relinquished By (Print):	Date/Time: <u>Apr 29/24 8:00</u>	Date/Time: <u>04/29/24 14:00</u>	Date/Time: <u>04/29/24 14:47</u>
Date/Time:	Temperature: _____ °C	Temperature: _____ °C	pH Verified: <input type="checkbox"/> By:



## Certificate of Analysis

**The Healthy Abode Inc.**

151 Bowie Avenue  
Toronto, ON M6E 2R1  
Attn: Angelina Sampieri

Client PO: 230 The Esplanade, Toronto, ON M5A 4J6  
Project: 24-3029-DSS  
Custody: 74972

Report Date: 2-May-2024  
Order Date: 2-May-2024

Revised Report

**Order #: 2418329**

This Certificate of Analysis contains analytical data applicable to the following samples as submitted :

Parcel ID	Client ID
2418329-01	B019
2418329-02	B020
2418329-03	B021
2418329-04	B022
2418329-05	B023
2418329-06	B024

Approved By



Emma Diaz  
Senior Analyst

Certificate of Analysis

Report Date: 2-May-2024

Client: The Healthy Abode Inc.

Order Date: 2-May-2024

Client PO: 230 The Esplanade, Toronto, ON M5A 4J6

Project Description: 24-3029-DSS

**Asbestos, PLM Visual Estimation \*\*MDL- 0.5%\*\***

Parcel ID	Sample Date	Friability	Colour	Description	Asbestos Detected	Material Identification	% Content
2418329-01	01-May-24	Friable	White	Insulation	No	<b>Client ID: B019</b>	
						MMVF	95
						Non-Fibers	5
2418329-02	01-May-24	Friable	White	Insulation	No	<b>Client ID: B020</b>	
						MMVF	95
						Non-Fibers	5
2418329-03	01-May-24	Friable	White	Insulation	No	<b>Client ID: B021</b>	
						MMVF	95
						Non-Fibers	5
2418329-04	01-May-24	Friable	Yellow	Insulation	No	<b>Client ID: B022</b>	
						MMVF	95
						Non-Fibers	5
2418329-05	01-May-24	Friable	Yellow	Insulation	No	<b>Client ID: B023</b>	
						MMVF	95
						Non-Fibers	5
2418329-06	01-May-24	Friable	Yellow	Insulation	No	<b>Client ID: B024</b>	
						MMVF	95
						Non-Fibers	5

MMVF: Man Made Vitreous Fibers: Fiberglass, Mineral Wool, Rockwool, Glasswool

Certificate of Analysis

Client: **The Healthy Abode Inc.**

Client PO: **230 The Esplanade, Toronto, ON M5A 4J6**

Report Date: 2-May-2024

Order Date: 2-May-2024

Project Description: **24-3029-DSS**

**Analysis Summary Table**

Analysis	Method Reference/Description	Lab Location	Lab Accreditation	Analysis Date
Miss - Asbestos, Visual Estimation		1 - Mississauga	CALA 3762	2-May-2024

Mississauga Lab: 15 - 6800 Kitimat Rd Mississauga, Ontario, L5N 5M1

**Work Order Revisions | Comments**

Revision-1: This report includes updated Sample IDs, as per COC.



**Chain of Custody**  
(Lab Use Only)

No 74972

Client Name: \_\_\_\_\_

Contact Name: *the healthy abode* The Healthy Abode Inc.  
151 Bowie Ave. Toronto, ON.  
Address: 116E 2R1  
647-889-2254  
angelina@thehealthyabode.ca

Telephone: \_\_\_\_\_

Project Reference: *230-3029 -DSS*

Quote #: *230 The Esplanade*

PO #: *Toronto ON*

Email Address: *MSA 436*

**Turnaround Time:**

Immediate     1 Day  
 4 Hour         2 Day  
 8 Hour         3 Day  
                          Regular

Date Required: *May 2/24*

**ASBESTOS & MOLD ANALYSIS**

Matrix:  Air  Bulk  Tape Lift  Swab  Other    Regulatory Guideline:  ON  QC  AB  SK  Other:

Analyses:  Microscopic Mold  Culturable Mold  Bacteria GRAM  PCM Asbestos  PLM Asbestos  Chatfield Asbestos  TEM Asbestos

Paracel Order Number:		Asbestos - Bulk					
2418329		Sample ID	Sampling Date	Air Volume (L)	Analysis Required	Identify Distinct Building Materials to Be Analyzed (if not specified, all materials identified will be analyzed) *	Positive Stop?
1	<i>Box B019</i>						
2	<i>Box B020</i>				<i>↓</i>	<i>" " " " " " " " " " " "</i>	<input checked="" type="checkbox"/>
3	<i>Box B021</i>						<input type="checkbox"/>
4	<i>Box B022</i>	<i>Yellow</i>			<i>ISO</i>	<i>Basement Parking Garage level #1 Oldst layer insulation</i>	<input checked="" type="checkbox"/>
5	<i>Box B023</i>	<i>"</i>			<i>↓</i>	<i>" " " " " " " " " " " "</i>	<input checked="" type="checkbox"/>
6	<i>Box B024</i>	<i>"</i>					<input type="checkbox"/>
7							<input type="checkbox"/>
8							<input type="checkbox"/>
9							<input type="checkbox"/>
10							<input type="checkbox"/>
11							<input type="checkbox"/>
12							<input type="checkbox"/>

\* If left blank, all distinct materials identified in the samples will be analyzed and reported separately as per EPA 600/R-93/116. Additional charges will apply.

Comments: *HA HOMOGENIZE A1*

Relinquished By (Sign): \_\_\_\_\_ Received at Depot: \_\_\_\_\_ Received at Lab: *JK* Verified By: *JK*

Relinquished By (Print): \_\_\_\_\_ Date/Time: \_\_\_\_\_ Date/Time: *May 2/24 800* Date/Time: *May 2/24 9:54*

Method of Delivery: *United*

**PART 1 GENERAL**

**1.1 BID INFORMATION**

Date: \_\_\_\_\_  
Submitted by: \_\_\_\_\_  
(name) \_\_\_\_\_  
(address) \_\_\_\_\_  
\_\_\_\_\_

To: **St Lawrence Co-operative Daycare**  
230 The Esplanade,  
Toronto, ON M5E 1M6 4J6

Project: **SLCD-SAC**

**1.2 OFFER**

1.2.1 Having examined the Place of The Work and all matters referred to in the Instructions to Bidders and the Contract Documents prepared by **Scott Barker OAA / Scott Barker Architect** (the Consultant) for the above mentioned project, we, the undersigned, hereby offer to enter into a contract using CCDC 2-2020 Contract form as amended by any Supplementary Conditions, to perform the Work for the price of:

\$ \_\_\_\_\_ (numbers only), in  
lawful money of Canada.

1.2.2 We have included herewith, the required security Bid Bond and Consent of Surety/ Agreement to Bond as required by the Instruction to Bidders.

1.2.3 Taxes:

1.2.3.1 Applicable HST is excluded from the Bid Price.

1.2.3.2 All other taxes are included in Bid Price.

**1.3 ACCEPTANCE**

- 1.3.1 Refer to Section 00 21 13 - Instructions to Bidders for Conditions of acceptance.
- 1.3.2 This offer shall be open to acceptance and is irrevocable for period indicated in Section 00 21 13 - Instructions to Bidders.
- 1.3.3 If this Bid is accepted by the Owner within the time period stated above, we will:
  - 1.3.3.1 Execute the 'Agreement' within ten (10) days of receipt of the form of execution.
  - 1.3.3.2 Furnish the required bonds within seven (7) days of receipt of the Agreement.
  - 1.3.3.3 Commence work in accordance with Owner's desired schedule and constraint, upon written notification of acceptance of this bid.
  - 1.3.3.4 Attain Substantial Performance of the Work as follows:
    - .1 \_\_\_\_\_ calendar weeks from hand-over of the space from Owner.
  - 1.3.3.5 Attain 'Ready-for-Take-Over' as follows:
    - .1 \_\_\_\_\_ calendar weeks after Substantial Performance of the Work has been achieved.

**1.4 APPENDICES**

- 1.4.1 A list of Subcontractors is appended hereto and identified as 'Appendix - Subcontractors'.
- 1.4.2 A list of Unit Prices is appended hereto and identified as 'Appendix – Unit Prices'.
- 1.4.3 A list of Alternatives is appended hereto and identified as 'Appendix - Alternatives'.

**1.5 ADDENDA**

- 1.5.1 The following Addenda have been received. The modifications to the Contract Documents noted therein have been considered and all costs thereto are included in the Bid Price.
  - 1.5.1.1 Addendum # \_\_\_\_\_ to Addendum # \_\_\_\_\_

**1.6 CHANGES**

- 1.6.1 Except for the work of Phase 2 work (Alternative Price 1), which already includes Overhead and Profit, if the Consultant determines that the valuation method for Changes in the Work is net cost plus a percentage fee as specified by CCDC 2, our percentage fee shall comply with the stipulations set forth in Section 01 26 00.

**1.7 BID FORM SIGNATURE(S)**

The Corporate Seal of

\_\_\_\_\_  
(Bidder - please print)  
was hereunto affixed in the presence of:  
(Seal)

\_\_\_\_\_  
Authorized signing officer

\_\_\_\_\_  
Title

\_\_\_\_\_  
Authorized signing officer

\_\_\_\_\_  
Title

If this Bid is a joint venture or partnership, add additional forms of execution for each member of the joint venture on the appropriate form or forms, as above.

**END OF BID FORM**

**PART 1 GENERAL**

**1.1 BID INFORMATION**

Date: \_\_\_\_\_

Submitted by: \_\_\_\_\_

(name) \_\_\_\_\_

(address) \_\_\_\_\_

\_\_\_\_\_

To: **St Lawrence Co-operative Daycare**  
230 The Esplanade,  
Toronto, ON M5E 1M64J6

Project: **SLCD-SAC**



**PART 2 APPENDIX – SUBCONTRACTORS**

**2.1 GENERAL CONDITIONS**

- 2.1.1 The Bidder hereby proposes to employ the following Subcontractors and/or Suppliers to perform an item of the Work called for by the Contract. The Bidder confirm that all have been investigated to confirm their reliability and competency to carry out such work in accordance with the Contract Documents.
- 2.1.2 The Bidder acknowledges that the Instructions to Bidders require that it lists only one Subcontractor and/or Supplier for each item of the Work described in this List of Subcontractors. The Bidder further acknowledges that where they have entered "own forces" to perform an item of the Work, it their intention to use "own forces" for that purpose.
- 2.1.3 After bid submission, no substitution for a Subcontractor, Supplier or "own forces" will be permitted except as provided in the Contract.

Portion of the Work	Subcontractor's / Supplier Name

**PART 3 APPENDIX - UNIT PRICES**

**3.1 GENERAL CONDITIONS**

3.1.1 The following are incidental Unit Prices for specific portions of the Work as listed, and are applicable to authorized variations from the Contract Documents. All unit prices, unless specifically indicated, are for complete work, in place, supplied and installed in accordance with applicable Contract requirements and include all overhead and profit mark-up.

3.1.2 The Bidder agrees that:

3.1.2.1 the credits for deleted work shall be no less than eighty percent (80%) of the unit prices listed hereunder.

3.1.2.2 the Owner shall have the right to negotiate the cost of additional work instead of using the unit prices listed hereunder.

3.1.2.3 Prices listed hereunder do not include HST but include all other eligible taxes.

Item of Work	Quantity Unit	Unit Value
Core drilling of holes in slab, including all work associated with non-destructive testing and surveying prior to core drilling .	Each hole	
Filling of cores in slabs with approved cementitious material rated to provide minimum fire-resistance rating equal to that of existing slab.	Each hole.	

**PART 4 APPENDIX - ALTERNATIVES**

**4.1 GENERAL CONDITIONS**

- 4.1.1 The following prices are to be added to or deducted from the Base Bid if particular alternative prices are accepted by Owner. Amounts listed for each alternative price include costs of related coordination, modification, or adjustment.
- 4.1.2 If the alternative price does not affect the Contract Price, the Bidder shall indicate "NO CHANGE."
- 4.1.3 The Bidder shall be responsible for determining from the Contract Documents the effects of each alternative price on the Contract Time and the Contract Price.
- 4.1.4 The Owner reserves the right to accept or reject any alternative price in any sequence prior to Contract Award, and to amend the Contract accordingly throughout the duration of the Contract to accept an alternative. Alternative Prices must remain open for acceptance during entire duration of the Contract.
- 4.1.5 Acceptance or non-acceptance of any alternative prices by the Owner shall have no effect on the Contract Time unless specifically indicated otherwise by the Bidder.

**4.2 SCHEDULE OF ALTERNATIVES**

- 4.2.1 Alternative Price No. 1 (Phase 2)
  - 4.2.1.1 Base Bid: Work as indicated in Contract Documents (i.e. Phase 1 only)
  - 4.2.1.2 Alternative Description: Work of Phase 2 as identified in Contract Documents.
  - 4.2.1.3  **ADD**  **DEDUCT**  **NO CHANGE**  
\$ \_\_\_\_\_ (numbers only).
  - 4.2.1.4  **ADD**  **DEDUCT**  **NO CHANGE** \_\_\_ calendar days to adjust the Contract Time for this alternative.
  - 4.2.1.5 Refer to Section 01 23 00 for a detailed description of Phase 1 and Phase 2 work.

**4.3 BID FORM SIGNATURE(S)**

The Corporate Seal of

\_\_\_\_\_  
(Bidder - please print)  
was hereunto affixed in the presence of:  
(Seal)

\_\_\_\_\_  
Authorized signing officer

\_\_\_\_\_  
Title

\_\_\_\_\_  
Authorized signing officer

\_\_\_\_\_  
Title

If this Bid is a joint venture or partnership, add additional forms of execution for each member of the joint venture on the appropriate form or forms, as above.

**END OF BID FORM SUPPLEMENTS**

**1.1 FORM OF CONTRACT**

1.1.1 The form of Contract, including the Agreement, Definitions, and General Conditions is CCDC 2 – 2020, Stipulated Price Contract, subject to the modifications specified in Section 00 73 00 – Supplementary Conditions.

**1.2 CONTRACT COPYRIGHT AND AVAILABILITY**

1.2.1 The CCDC form of Contract is a copyrighted document published by the Canadian Construction Documents Committee. It is incorporated into these Bid Documents by reference. It is available for purchase from any CCDC document outlet. Refer to [ccdc.org](http://ccdc.org).

**1.3 CONTRACT PREPARATION FOR SIGNING**

1.3.1 The Consultant will prepare two copies of the form of Contract for signing by the Contractor and the Owner after notice of award. Each copy will be comprised of the CCDC form of Contract with a CCDC copyright seal affixed, with a completed Agreement form, and with other Contract Documents referenced or appended.

END OF SECTION

**1.1 INTENT**

- 1.1.1 The Recommended Supplementary Conditions for the Stipulated Price Contract – CCDC 2-2020 September 15, 2021, (Revised March 15, 2024) as published by the Ontario Association of Architects and developed in consultation and agreement with the Ontario General Contractors Association (OGCA) are attached hereto.
- 1.1.2 These Supplementary Conditions amend the General Conditions of CCDC 2-2020 as indicated. Provisions not amended remain in full force and effect.

END OF SECTION

*The following supplementary conditions to the CCDC 2-2020 Stipulated Price Contract have been developed in consultation and agreement with the Ontario General Contractors Association (OGCA) and are in alignment with supplementary conditions that have been established previously in consultation with specific owner groups and industry partners. This document updates the previous supplementary conditions document which was jointly developed for use with CCDC 2-2008. Revisions to this document are indicated by a vertical bar in the right margin of the paragraph where the revision was made.*

*The OGCA has issued this same set of supplementary conditions to their members with the advice that they have been developed in consultation with the Ontario Association of Architects (OAA).*

## **Recommended Supplementary Conditions for the Stipulated Price Contract – CCDC 2-2020**

**September 15, 2021, (Revised March 15, 2024)**

The Standard Construction Document for CCDC 2 Stipulated Price Contract, 2020 English version, consisting of the Agreement Between *Owner* and *Contractor*, Definitions, and General Conditions of the Stipulated Price Contract, Parts 1 to 13 inclusive, governing same is hereby made part of these *Contract Documents*, with the following amendments, additions and modifications. Where these amendments, additions, and modifications specifically reference a change to the Agreement, Definitions, or General Conditions, these amendments, additions and modifications shall govern.

Where a General Condition or paragraph of the General Conditions of the Stipulated Price Contract is deleted by these Supplementary Conditions, the numbering of the remaining General Conditions or paragraphs shall remain unchanged, and the numbering of the deleted item will be retained, unused

## **AMENDMENTS TO AGREEMENT**

### **ARTICLE A-5 – PAYMENT**

- .1 In paragraph 5.1.1 of Article A-5 add the following words to the end:  
“or, where there is no *Payment Certifier*, jointly by the *Owner* and *Contractor*”

### **ARTICLE A-6 – RECEIPT AND ADDRESSES FOR NOTICES IN WRITING**

- .1 Delete paragraph 6.5 of Article A-6 in its entirety and replace it with the following:  
“6.5 Contact information for a party may be changed by *Notice in Writing* to the other party setting out the new contact information in accordance with this Article.”

## AMENDMENTS TO DEFINITIONS

- .1 Add the following definition: Proper Invoice  
“*Proper Invoice* means a “proper invoice” as defined in the *Payment Legislation*, if any, and as may be modified by written agreement between the parties to the extent permitted by such *Payment Legislation*.”
- .2 Add the following definition: Submittals  
“*Submittals* are documents or items required by the *Contract Documents* to be provided by the *Contractor* such as:
- *Shop Drawings*, samples, models, mock ups to indicate details or characteristics, before the portion of the *Work* that they represent can be incorporated into the *Work*, and
  - As-built drawings and manuals to provide instructions to the operation and maintenance of the *Work*.”

## SUPPLEMENTARY CONDITIONS

### PART 1 GENERAL PROVISIONS

#### GC 1.1 CONTRACT DOCUMENTS

- .1 Delete paragraphs 1.1.3 and 1.1.4 in their entirety and replace them with the following:
- “1.1.3 The *Contractor* shall review the *Contract Documents* for the purpose of facilitating and co-ordination and execution of the *Work* by the *Contractor*. The *Contractor* shall report promptly to the *Consultant* any ambiguities, design issues or other matters requiring clarification made known to the *Contractor* or that the *Contractor* may discover from such a review. Such review by the *Contractor* shall comply with the standard of care described in paragraph 3.9.1 of the *Contract*.
- 1.1.4 Except for its obligation to review the *Contract Documents* and report the result pursuant to paragraph 1.1.3, the *Contractor* is not responsible for ambiguities, design issues or other matters requiring clarification in the *Contract Documents* and does not assume any responsibility to the *Owner* or to the *Consultant* for the accuracy of the *Contract Documents*. Without limiting the foregoing, the *Contractor* shall not be liable for any damages or costs resulting from any ambiguities, design issues or other matters requiring clarification in the *Contract Documents* which the *Contractor* could not reasonably have discovered from such a review in accordance with the standard of care. If the *Contractor* does discover any ambiguities, design issues or other matters requiring clarification in the *Contract Documents*, the *Contractor* shall not proceed with the work affected until the *Contractor* has received modified or additional information from the *Consultant*. The impacts of any ambiguities, design issues or other matters requiring clarification in the *Contract Documents*, including to the *Contract Price* and *Contract Time*, shall be addressed by the parties in accordance with Part 6 – CHANGES.”
- .2 Add the following to the end of subparagraph 1.1.6.2:  
“Except to the extent the *Consultant* is indemnified as a third party beneficiary as provided in subparagraphs 9.2.7.4 and 9.5.3.4 and in paragraph 13.1.3.”



## **PART 2 ADMINISTRATION OF THE CONTRACT**

### **GC 2.2 ROLE OF THE CONSULTANT**

- .1 In paragraph 2.2.3 add the following to the end:

“Without limiting the foregoing, the *Consultant* may appoint one or more authorized representatives in writing who may fulfill the obligations of the *Consultant* under this *Contract*.”
- .2 In paragraph 2.2.8 add the words “, written statements” after the word “interpretations” in both the first and second sentences; and
  - i. add the following to the end of paragraph 2.2.8:

“The *Owner* and the *Contractor* shall waive any claims against the *Consultant* arising out of its making of any interpretations, written statements or findings in accordance with paragraphs 2.2.6, 2.2.7, 2.2.8, and 7.1.2, but only to the extent that any such interpretations, written statements, and findings are made by the *Consultant* in an unbiased manner, and in accordance with the *Consultant’s* professional standard of care at law.”
- .3 In paragraph 2.2.13 add the words “which are provided” before the words “by the *Contractor*”.

### **GC 2.4 DEFECTIVE WORK**

- .1 In paragraph 2.4.1:
  - i. Add after the words “shall promptly correct” the phrase “in a manner acceptable to the *Owner* and the *Consultant*”; and
  - ii. Add after the words “*Contract Documents*” the phrase “or work that the *Contractor* discovers to be defective, whether or not the defective work had been identified by the *Consultant*, and”.
- .2 Add new paragraph 2.4.4 as follows:

“2.4.4 The *Contractor* shall prioritize the correction of any defective work which, in the sole discretion of the *Owner*, adversely affects the day-to-day operation of the *Owner*.”

## **PART 3 EXECUTION OF THE WORK**

### **GC 3.1 CONTROL OF THE WORK**

- .1 Add new paragraph 3.1.3 as follows:

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

## **GC 3.2 CONSTRUCTION BY OWNER AND OTHER CONTRACTORS**

- .1 Add new paragraph 3.2.7 as follows:

“3.2.7 At the commencement of the *Work*, the *Contractor* shall prepare for the review and acceptance of the *Owner* and the *Consultant*, a schedule indicating the times, within the construction schedule referred to in GC 3.4, that items that are specified to be *Owner* purchased and *Contractor* installed or hooked up are required at the site to avoid delaying the progress of the *Work*.”

## **GC 3.7 LABOUR AND PRODUCTS**

- .1 Add the following to the end of paragraph 3.7.1:

“The *Contractor* represents that it has sufficient skilled employees to replace, subject to the *Owner’s* approval, acting reasonably, its designated supervisor and project manager in the event of death, incapacity, removal or resignation.”

- .2 Add new paragraphs 3.7.4 and 3.7.5 as follows:

“3.7.4 The *Owner* shall provide the *Contractor* in a timely manner with all relevant information (including storage, protection, and installation requirements) regarding *Products* to be supplied by the *Owner* or other contractors and, prior to delivery of any such *Products* to the *Place of the Work*, the *Owner* shall obtain the *Contractor’s* written approval of the delivery date and proposed storage, protection and installation requirements.

3.7.5 Once the *Contractor* has accepted delivery of *Products*, the *Contractor* shall be responsible for the safe storage and protection of *Products* as required to avoid dangerous conditions or contamination to the *Products* or other persons or property. *Products* shall be stored in locations and at the *Place of the Work* to the satisfaction of the *Owner* and the *Consultant* as agreed and approved by the *Contractor* pursuant to paragraph 3.7.4.

Notwithstanding the foregoing, the *Contractor* shall not be responsible for any *Products* supplied by the *Owner* or other contractors unless:

- (i) the *Contract Documents* expressly stipulate that such *Product* is to be the *Contractor’s* responsibility and to be installed by the *Contractor* as part of the *Work*;
- (ii) the *Contractor* has or has received from the *Owner* proof of insurance coverage sufficient, at a minimum, to cover the replacement cost of such *Product*; and
- (iii) the *Owner* obtained the *Contractor’s* approval as required by paragraph 3.7.4.”

## **GC 3.8 SHOP DRAWINGS**

- .1 Add the words “AND OTHER SUBMITTALS” to the title of GC 3.8 after the words “SHOP DRAWINGS”.

- .2 Add the words “and *Submittals*” after the words “*Shop Drawings*” in paragraphs 3.8.1, 3.8.2, 3.8.3, 3.8.3.2, 3.8.5, 3.8.6, and 3.8.7.

- .3 Delete paragraph 3.8.2 in its entirety and replace it with new paragraph 3.8.2 as follows:

“3.8.2 Prior to the first application for payment, the *Contractor* and the *Consultant* shall jointly prepare a schedule of the dates for submission and return of *Shop Drawings* and *Submittals* in an orderly sequence.”

- .4 Delete the words “with reasonable promptness so as to cause no delay in the performance of the Work” and replace them with the words “within 10 *Working Days* or such longer period as may be reasonably required” in paragraph 3.8.7.

### **GC 3.9 PERFORMANCE BY CONTRACTOR**

- .1 Add new General Condition GC 3.9 as follows:

#### **“GC 3.9 PERFORMANCE BY CONTRACTOR**

- 3.9.1 In performing its services and obligations under the *Contract*, the *Contractor* shall exercise a standard of care, skill and diligence that would normally be provided by an experienced and prudent contractor supplying similar services for similar projects. The *Contractor* acknowledges and agrees that throughout the *Contract*, the *Contractor’s* obligations, duties and responsibilities shall be interpreted in accordance with this standard. The *Contractor* shall exercise the same standard of due care and diligence in respect of any *Products*, personnel, or procedures which it may recommend to the *Owner*.”

## **PART 4 ALLOWANCES**

### **GC 4.1 CASH ALLOWANCES**

- .1 Delete paragraph 4.1.7 in its entirety and replace it with the following:
  - “4.1.7 At the commencement of the *Work*, the *Contractor* shall prepare for the review and acceptance of the *Owner* and the *Consultant* a schedule indicating the times within the construction schedule referred to in GC 3.4 that items called for under cash allowances are required to be delivered to the *Place of the Work* to avoid delaying the progress of the *Work*.”
- .2 Add new paragraph 4.1.8 as follows:
  - “4.1.8 The *Owner* reserves the right to call, or to have the *Contractor* call, for competitive bids for portions of the *Work* to be paid for from cash allowances.”

## **PART 5 PAYMENT**

### **GC 5.4 PAYMENT OF HOLDBACK UPON SUBSTANTIAL PERFORMANCE OF THE WORK**

- .1 Delete all paragraphs of GC 5.4 in their entirety and replace them with the following paragraphs:
  - “5.4.1 When the *Contractor* considers that the *Work* is substantially performed, or if permitted by the lien legislation applicable to the *Place of the Work* a designated portion thereof which the *Owner* agrees to accept separately is substantially performed, the *Contractor* shall, within five (5) *Working Days*, deliver to the *Consultant* and to the *Owner* a comprehensive list of items to be completed or corrected, together with a written application for a review by the *Consultant* to establish *Substantial Performance of the Work* or substantial performance of the designated portion of the *Work*. Failure to include an item on the list does not alter the responsibility of the *Contractor* to complete the *Contract*.

- 5.4.2 The *Consultant* will review the *Work* to certify or verify the validity of the application and shall promptly, and in any event, no later than 10 calendar days after receipt of the *Contractor's* application:
- .1 advise the *Contractor* in writing that the *Work* or the designated portion of the *Work* is not substantially performed and give reasons why, or
  - .2 state the date of *Substantial Performance of the Work* or a designated portion of the *Work* in a certificate and issue a copy of that certificate to each of the *Owner* and the *Contractor*.
- 5.4.3 Where the holdback amount required by the applicable lien legislation has not been placed in a separate lien holdback account, the *Owner* shall, no later than 10 calendar days prior to the expiry of the holdback period stipulated in the lien legislation applicable to the *Place of the Work*, place the holdback amount in a bank account in the joint names of the *Owner* and the *Contractor*.
- 5.4.4 Subject to the requirements of any *Payment Legislation*, all holdback amounts prescribed by the applicable lien legislation for the *Place of the Work* shall become due and payable to the *Contractor* no later than 10 *Working Days* following the expiration of the holdback period stipulated in the lien legislation applicable to the *Place of the Work*, as certified or verified by the *Consultant* when permitted by any *Payment Legislation*.
- 5.4.5 The *Contractor* shall submit an application for release of the lien holdback amount in accordance with the lien legislation applicable to the *Place of the Work*. Except to the extent required by any *Payment Legislation*, such application for release of the holdback shall not constitute an application for payment that is subject to *Proper Invoice* requirements.
- 5.4.6 Where legislation permits progressive release of the holdback for a portion of the *Work* and the *Consultant* has certified or verified that the part of the *Work* has been performed prior to *Substantial Performance of the Work*, the *Owner* hereby agrees to release, and shall release the holdback for such portion of the *Work* to the *Contractor* in accordance with such legislation.
- 5.4.7 Notwithstanding any progressive release of the holdback, the *Contractor* shall ensure that such parts of the *Work* are protected pending the issuance of a final certificate for payment or until the *Owner* takes early occupancy in accordance with GC12.2, whichever comes first, and shall be responsible for the correction of defects or work not performed regardless of whether or not such was apparent when the holdback was released.”

## **GC 5.5 FINAL PAYMENT**

- .1 Add to the end of paragraph 5.5.1 the following sentence:  
“The application for final payment shall meet the requirements of a *Proper Invoice*.”
- .2 Add the following to the end of paragraph 5.5.3:  
“Subject to any *Payment Legislation*, when the *Consultant* finds the *Contractor's* application for final payment to be not valid, the *Contractor* shall revise and resubmit the application when the *Contractor* has addressed the reasons given by the *Consultant*.”

## **PART 6 CHANGES IN THE WORK**

### **GC 6.3 CHANGE DIRECTIVE**

- .1 Delete the word “and” from the end of subparagraph 6.3.7.18.
- .2 Delete the period from the end of subparagraph 6.3.7.19 and replace it with “; and”.
- .3 Add new subparagraph 6.3.7.20 as follows:  
“.20 safety measures and requirements.”

### **GC 6.4 CONCEALED OR UNKNOWN CONDITIONS**

- .1 Add new paragraph 6.4.5:  
“6.4.5 The *Contractor* confirms that, prior to bidding the *Project*, it carefully reviewed the *Place of the Work* and applied to that review the degree of care and skill described in paragraph 3.9.1, given the amount of time provided between the issue of the bid documents and the actual closing of bids, the degree of access provided to the *Contractor* prior to submission of bid, and the sufficiency and completeness of the information provided by the *Owner*. The *Contractor* is not entitled to compensation or to an extension of the *Contract Time* for conditions which could reasonably have been ascertained by the *Contractor* by such review undertaken in accordance with this paragraph 6.4.5.”

### **GC 6.6 CLAIMS FOR A CHANGE IN CONTRACT PRICE**

- .1 Add the words “as noted in paragraph 6.6.3” after the words “of the claim” in paragraph 6.6.5 and add the words “and the *Consultant*”, at the end of paragraph 6.6.5.

## **PART 8 DISPUTE RESOLUTION**

### **GC 8.2 ADJUDICATION**

- .1 Delete the word “prescribed” from paragraph 8.2.1 and substitute the words “provided for”.

### **GC 8.3 NEGOTIATION, MEDIATION AND ARBITRATION**

- .1 Add the following new paragraphs 8.3.9 to 8.3.13:  
“8.3.9 Within five days of receipt of the notice of arbitration by the responding party under paragraph 8.3.6, the *Owner* and the *Contractor* shall give the *Consultant* a written notice containing:
  - .1 a copy of the notice of arbitration;
  - .2 a copy of supplementary conditions 8.3.9 to 8.3.13 of this *Contract*, and;
  - .3 any claims or issues which the *Contractor* or the *Owner*, as the case may be, wishes to raise in relation to the *Consultant* arising out of the issues in dispute in the arbitration.”

- 8.3.10 The *Owner* and the *Contractor* agree that the *Consultant* may elect, within ten days of receipt of the notice under paragraph 8.3.9, to become a full party to the arbitration under paragraph 8.3.6 if the *Consultant*:
- .1 has a vested or contingent financial interest in the outcome of the arbitration;
  - .2 gives the notice of election to the *Owner* and the *Contractor* before the arbitrator is appointed;
  - .3 agrees to be a party to the arbitration within the meaning of the rules referred to in paragraph 8.3.6, and,
  - .4 agrees to be bound by the arbitral award made in the arbitration.
- 8.3.11 Without limiting and subject to the *Owner* and *Contractor's* rights under paragraph 8.3.12 to challenge whether the *Consultant* has satisfied the requirements of paragraph 8.3.10, if an election is made under paragraph 8.3.10:
- .1 the *Owner* or *Contractor* may request particulars and evidence of the *Consultant's* vested or contingent financial interest in the outcome of the arbitration;
  - .2 the *Consultant* shall participate in the appointment of the arbitrator; and,
  - .3 notwithstanding the rules referred to in paragraph 8.3.6, the time period for reaching agreement on the appointment of the arbitrator shall begin to run from the date the respondent receives a copy of the notice of arbitration.
- 8.3.12 The arbitrator in the arbitration in which the *Consultant* has elected under paragraph 8.3.10 to become a full party may:
- .1 on application of the *Owner* or the *Contractor*, determine whether the *Consultant* has satisfied the requirements of paragraph 8.3.10, and;
  - .2 make any procedural order considered necessary to facilitate the addition of the *Consultant* as a party to the arbitration.
- 8.3.13 The provisions of paragraph 8.3.9 shall apply (with all appropriate changes being made) to written notice to be given by the *Consultant* to any sub-consultant."

## **PART 9 PROTECTION OF PERSONS AND PROPERTY**

### **GC 9.1 PROTECTION OF WORK AND PROPERTY**

- .1 Delete subparagraph 9.1.1.1 in its entirety and replace it with the following:
  - “.1 errors or omissions in the *Contract Documents* which the *Contractor* could not have discovered applying the standard of care described in paragraph 3.9.1;”
- .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 paragraph 3.9.1.”

## **GC 9.2 TOXIC AND HAZARDOUS SUBSTANCES**

- .1 Add the following words to paragraph 9.2.6 after the word "responsible":  
"or whether any toxic or hazardous substances or materials already at the *Place of the Work* (and which were then harmless or stored, contained or otherwise dealt with in accordance with legal and regulatory requirements) were dealt with by the *Contractor* or anyone for whom the *Contractor* is responsible in a manner which does not comply with legal and regulatory requirements, or which threatens human health and safety or the environment, or material damage to the property of the *Owner* or others,"
- .2 Add the words "and the *Consultant*" after the word "*Contractor*" in subparagraph 9.2.7.4.
- .3 Add the following words to paragraph 9.2.8 after the word "responsible":  
"or that any toxic or hazardous substances or materials already at the *Place of the Work* (and which were then harmless or stored, contained or otherwise dealt with in accordance with legal and regulatory requirements) were dealt with by the *Contractor* or anyone for whom the *Contractor* is responsible in a manner which does not comply with legal and regulatory requirements, or which threatens human health and safety or the environment, or material damage to the property of the *Owner* or others,"

## **GC 9.5 MOULD**

- .1 Add the words "and the *Consultant*" after the word "*Contractor*" in subparagraph 9.5.3.4.

## **PART 10 GOVERNING REGULATIONS**

### **GC 10.2 LAWS, NOTICES, PERMITS, AND FEES**

- .1 Delete from the first line of paragraph 10.2.5 the word, "The" and substitute the words "Subject to paragraph 3.9.1, the".

## **PART 12 OWNER TAKEOVER**

### **GC 12.1 READY-FOR-TAKEOVER**

- .1 After the second occurrence of the term "*Ready-for-Takeover*" insert before the term "*Ready-for-Takeover*" in paragraph 12.1.3 the words "determination of".

### **GC 12.2 EARLY OCCUPANCY BY THE OWNER**

- .1 Delete the word "achieve" in paragraph 12.2.4 and replace it with the words "have achieved".

### **GC 12.3 WARRANTY**

- .1 Delete the word "The" from the first line of paragraph 12.3.2 and replace it with the words "Subject to paragraph 3.9.1, the".

## PART 13 INDEMNIFICATION AND WAIVER

### GC 13.1 INDEMNIFICATION

- .1 Add new paragraph 13.1.0 as follows:
  - "13.1.0 The *Contractor* shall indemnify and hold harmless the *Consultant*, its agents and employees from and against all claims, demands, losses, costs, damages, actions, suits, or proceedings by third parties that arise out of, or are attributable to the *Contractor's* performance of the *Contract*, provided such claims are:
    - .1 attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property, and
    - .2 caused by negligent acts or omissions of the *Contractor* or anyone for whose negligent acts or omissions the *Contractor* is liable, and
    - .3 made by *Notice in Writing* within a period of 6 years from the *Ready-for-Takeover* date or within such shorter such period as may be prescribed by any limitation statute or the Province or Territory of the *Place of Work*."
- .2 Add the words "13.1.0," after the word "paragraphs" in paragraph 13.1.3.

**[End of recommended supplementary conditions]**



**1.1 PERFORMANCE BOND**

- 1.1.1 Provide security for performance of the Contract in the form of a Performance Bond for 50% of the Contract Price.
- 1.1.2 Bond shall be in accordance with the latest edition of the Canadian Construction Documents Committee (CCDC) Standard Form of Performance Bond, CCDC 221.
- 1.1.3 Bond shall be issued by a duly licensed surety company authorized to transact the business of suretyship in the province or territory of the Place of the Work.
- 1.1.4 Bond shall name Owner as the obligee and shall be signed, sealed, and dated by both Contractor and surety company.
- 1.1.5 Submit bond to Owner within 15 calendar days after contract award.

**1.2 LABOUR AND MATERIAL PAYMENT BOND**

- 1.2.1 Provide security for payment of labour and material provided in the performance of the Work in the form of a Labour and Material Payment Bond for 50% of the Contract Price.
- 1.2.2 Bond shall be in accordance with the latest edition of the Canadian Construction Documents Committee (CCDC) Standard Form of Labour and Material Payment Bond, CCDC 222.
- 1.2.3 Bond shall be issued by a duly licensed surety company authorized to transact the business of suretyship in the province or territory of the Place of the Work.
- 1.2.4 Bond shall name Owner as the obligee and shall be signed, sealed, and dated by both Contractor and surety company.
- 1.2.5 Submit bond to Owner within 15 calendar days after contract award.

END OF SECTION

## 1.1 WORK COVERED BY CONTRACT DOCUMENTS

- 1.1.1 Work of this Contract identified as SLCD-SAC - 24.209 includes furnishing labour, materials, equipment, services and other related expenses to complete requirements specified under Contract Documents.
- 1.1.2 General Project Description: Interior alterations to an existing daycare will be conducted in two phases. The first phase will cover approximately 217 square meters, and the second phase will cover approximately 245 square meters.
- 1.1.3 Project is located at 230 The Esplanade, Toronto (Convenience Address) (243 The Esplanade) , Toronto, ON M5A 4J6
- 1.1.4 Contract Type: Project is to be governed by a CCDC 2-2020 Contract.
- 1.1.5 Without limiting generality of foregoing, Contractor is responsible for coordination of various parts of the Work so that no part is left in an unfinished or incomplete condition.

## 1.2 WORK BY OWNER OR UNDER OTHER CONTRACTS

- 1.2.1 Ensure full cooperation with separate contractors to enable smooth execution of such contracts without interference or delay to Work of this Contract. Coordinate Work of this Contract with Work under separate contracts.
- 1.2.2 Immediately report defects, which affect quality and performance of the Work, in writing to Consultant. Commencement of parts of the Work of this Contract, in existing areas and in areas provided by Other Contractors, will be deemed to signify Contractor's acknowledgment and acceptance of those parts of the Work.
- 1.2.3 NIC Work: "NIC" refers to Work not performed or provided under this Contract. "NIC" signifies "Not In this Contract" or "Not a Part of Work by Contractor". NIC Work may be shown on Drawings and in scheduling amount of time and materials necessary for completion of Contract.

## 1.3 OWNER-SUPPLIED / CONTRACTOR-INSTALLED PRODUCTS

- 1.3.1 Owner Responsibilities:
  - 1.3.1.1 Order and pay for Owner-supplied Products not already in Owner's possession.
  - 1.3.1.2 Arrange and pay for delivery of Owner-supplied Products F.O.B. the site, within time frames required by Contractor's progress schedule. If delivered sooner than required by Contractor's latest progress schedule submitted to Owner, arrange and pay for delivery to a temporary storage location and subsequent delivery to the site.
  - 1.3.1.3 Advise Contractor in writing of the value of Owner-supplied Products for Contractor's insurance purposes.
  - 1.3.1.4 Arrange and pay for delivery to Contractor of reviewed Shop Drawings, Product data, samples, and manufacturer's installation instructions.
  - 1.3.1.5 Inspect deliveries jointly with Contractor.
  - 1.3.1.6 Submit claims for transportation damage.

- 1.3.1.7 Arrange for replacement of damaged, defective or missing items identified at time of delivery.
- 1.3.1.8 Arrange for manufacturer's field services.
- 1.3.1.9 Arrange for delivery of manufacturer's warranties to Contractor for inclusion in operation and maintenance manual.
- 1.3.2 Contractor Responsibilities:
  - 1.3.2.1 Designate in progress schedule, time frames for delivery of Owner-supplied Products to the site and for receipt of related submittals. If the site is not ready to receive delivery of Owner-supplied Products within the time frame indicated in the latest progress schedule submitted to Owner, arrange and pay for delivery to a temporary storage location and subsequent delivery to the site.
  - 1.3.2.2 Review all required submittals and notify Consultant of any observed discrepancies or anticipated problems.
  - 1.3.2.3 Ensure that course of construction insurance is adequate to cover Owner-supplied Products.
  - 1.3.2.4 Receive and unload Owner-supplied Products at the site.
  - 1.3.2.5 Inspect deliveries jointly with Owner. Record and notify Owner and Consultant of shortages and visibly damaged or defective items.
  - 1.3.2.6 Handle Owner-supplied Products at site, including uncrating and storage. Dispose of waste materials and debris.
  - 1.3.2.7 Take appropriate precautions to protect Owner-supplied Products from loss or damage.
  - 1.3.2.8 Repair or replace items damaged on site.
  - 1.3.2.9 Assemble, install, connect, adjust, and finish Owner-supplied Products as specified.
  - 1.3.2.10 Arrange for inspections required by authorities having jurisdiction as specified.
  - 1.3.2.11 Arrange for or perform testing as specified.
  - 1.3.2.12 Workmanship warranty for installation.
- 1.3.3 The following Products will be supplied by Owner and installed by Contractor:
  - 1.3.3.1 As noted on Drawings and Schedules.

#### **1.4 SUSTAINABILITY TARGETS**

- 1.4.1 Project does not intend to target specific sustainability certifications. Contractor is nonetheless encouraged to employ best-practice sustainable measures throughout duration of construction to minimize CO2 emissions, enhance indoor air quality, and optimize resource use to reduce Project's environmental footprint.

#### **1.5 SPECIFICATIONS LANGUAGE, STYLE AND CONVENTIONS**

- 1.5.1 Imperative Mood: Specifications are written in imperative mood and in streamlined form. Imperative language is directed to Contractor, unless stated otherwise.

- 1.5.1.1 Complete sentences by reading "shall", " Contractor shall", "shall be", and similar phrases by inference. Where a colon (:) is used within sentences and phrases, read the words "shall be" by inference.
- 1.5.1.2 Fulfill and perform all indicated requirements whether stated imperatively or otherwise.
- 1.5.1.3 When used in the context of a Product, read the word "provide" to mean "supply and install to result in a complete installation ready for its intended use".
- 1.5.2 Specification Structure: Specifications are arranged using a modified CSI/CSC 3-part SectionFormat® structure in 3 broad "Parts": 1. General, 2. Products and 3. Execution.
  - 1.5.2.1 Installation Requirements: Specifications are not intended as detailed description of installation methods but serve to indicate particular requirements in completing the Work. Where Contract Documents do not Provide sufficient information for complete installation of item, then as supplement, comply with manufacturer's written instructions for quality of Work.
- 1.5.3 Singular and Gender References: Where items in Contract Documents are referred to in singular, provide as many as required to complete the Work. Words used in one gender only are intended to be inclusive.
- 1.5.4 Drawings and Schedules: Use for scope and arrangement understanding; refer to them for item locations unless otherwise stated in Specifications.
- 1.5.5 Text Characteristics: No implied emphasis for text colour or hyperlink features.
- 1.5.6 Hyperlinks: May lead to external information, not part of Contract Documents unless specifically indicated.
- 1.5.7 Division 00 and Division 01 Requirements: General provisions of the Contract, including General Conditions and Supplementary Conditions, apply to all sections of the Specifications. Similarly, requirements of Sections in Division 01 are applicable to the Work of all sections of the Specifications.

## 1.6 PROJECT COORDINATION AND DIVISION OF WORK

- 1.6.1 Division of the Work among Trade Contractors, Subcontractors, and Sub-sub-contractors is solely Contractor's responsibility. Consultant and Owner assume no responsibility to act as an arbiter to establish subcontract limits between Sections or Divisions of the Work.
- 1.6.2 Scope and Extent Coordination:
  - 1.6.2.1 Analyze Contract Documents to define the extent of the Work. Coordinate scope and extent of Work for each trade. Coordinate Work of all trades including construction sequence, schedule and interfacing of all Work. Coordinate Work of each trade as required for satisfactory and expeditious completion of The Work. Ensure components to be built in are supplied in time with setting Drawings and other related information.
  - 1.6.2.2 Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of

The Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.

1.6.2.3 Schedule construction operations in sequence required to obtain the best results, where installation of one part of the Work depends on installation of other components, before or after its own installation. Make adequate provisions to accommodate items scheduled for later installation.

1.6.3 Specifications and Drawings Organization: Organization of Specifications into CSI/CSC MasterFormat® Divisions or into 3-part SectionFormat® is solely for Contractor's convenience. This organization is not intended to determine subcontract limits between Sections or Divisions of the Work.

1.6.3.1 Arrangement of Specifications, Drawings or schedules, must not affect Contractor's control or responsibility for dividing the Work or establishing each trade's scope of Work.

1.6.3.2 Claims for additional compensation due to disputes between trades resulting from Contractor's lack of coordination will not be permitted.

## 1.7 CONTRACT DOCUMENTS FOR CONSTRUCTION PURPOSES

1.7.1 Electronic Documents: Owner will supply Contractor with complete set of Contract Documents in PDF format prior to commencement of The Work. Contractor is permitted to print hard copies for construction purposes.

1.7.2 "IFC" Documents: Contractor acknowledges that Drawings and Specifications labeled as "Issued for Construction" or "IFC" represent Consultant's best effort at incorporating revisions issued during addenda and bidding or negotiation phase. In case of discrepancies, omission or conflict between "Issued for Construction" documents and Contract Documents, Contractor must promptly notify Consultant.

## 1.8 ORIGINAL DATA FILES

1.8.1 Original Data Files Not Provided Consultant: Consultant will not provide original data files in their original format for Contractor's use during construction process. Use Contract Documents issued as PDF files for preparation of as-built drawings.

## 1.9 DOCUMENTS AT THE SITE

1.9.1 Keep the following documents at Place of the Work, stored securely and in good order and available to Owner and Consultant in hard copy and digital form:

1.9.1.1 Current Contract Documents, including Drawings, Specifications and addenda.

1.9.1.2 Change Orders, Change Directives, and Supplementary Instructions.

1.9.1.3 Reviewed Shop Drawings, Product data and samples.

1.9.1.4 Field test reports and records.

1.9.1.5 Construction progress schedule.

1.9.1.6 Meeting minutes.

1.9.1.7 Manufacturer's certifications.

- 1.9.1.8 Permits, inspection certificates, and other documents required by authorities having jurisdiction.
- 1.9.1.9 Current as-built Drawings.
- 1.9.1.10 Safety Data Sheets (SDS) for all controlled Products.

#### **1.10 CONTRACTOR'S USE OF PREMISES**

- 1.10.1 Except as otherwise specified, Contractor has unrestricted use of Place of the Work from time of Contract award until Ready-for-Takeover.
- 1.10.2 Confine Construction Equipment, Temporary Work, storage of Products, waste products and debris, and all other construction operations to limits required by laws, ordinances, permits, and Contract Documents, whichever is most restrictive. Do not unreasonably encumber Place of the Work.
- 1.10.3 Refer to Section 01 14 00 for additional requirements.

#### **1.11 DISCREPANCIES/CONFLICTS/OMISSIONS**

- 1.11.1 If discrepancies, conflicts, or omissions in Drawings, Specifications, or other Contract Documents are suspected or if there is uncertainty about their meaning or intent, such uncertainties must immediately be reported to Consultant.
- 1.11.2 Resolving Conflicting Specifications: In cases where Specifications require compliance with multiple requirements that establish different or conflicting quantities or quality levels, Contractor must adhere to most stringent requirement. Where requirements are stated differently, but have apparently equal effects, immediately notify Consultant and obtain instructions before proceeding.
- 1.11.3 Resolving Conflicting Reference Standards: If compliance with multiple reference standards is specified and such standards establish different or conflicting requirements for minimum quantities or quality levels, comply with most stringent requirement. Where requirements are stated differently, but have apparently equal effects, immediately notify Consultant and obtain instructions before proceeding.
- 1.11.4 Minimum Quantity or Quality Levels: Specified or illustrated quantities or quality levels represent minimum that must be provided or performed. Actual installation may meet minimum specified levels or exceed them within reasonable limits. Numeric values indicated are to be interpreted as minimum or maximum as appropriate. Uncertainties must be referred to the Consultant for clarification.
- 1.11.5 Comply with Consultant's written instructions or explanations and proceed accordingly. If Changes to the Work are suspected or required, refer to Section 01 26 00, for appropriate procedures to follow.

END OF SECTION

## 1.1 GENERAL

- 1.1.1 Use of Site: Contractor is granted unrestricted use of Place of the Work for construction purposes, as defined by Contract boundaries. Owner retains right to enter the Place of the Work, to perform Work using their own forces, or engage Other Contractors to perform Work of Project in accordance with General Conditions and Supplementary Conditions of the Contract.
- 1.1.2 Construction Activities and Boundaries: Confine construction activities and materials to area indicated on Drawings and within property lines. Where temporary extension of boundaries is required by Contractor to perform Work of this Contract, obtain permission from Owner, and perform such Work at no additional cost to Owner.
  - 1.1.2.1 Additional Storage or Work Areas: Obtain and pay for use of additional storage or Work areas needed for operations under Contract.
- 1.1.3 Work Hour Restrictions: Perform Work during normal business hours, Monday to Friday, from 7:00 am to 5:00 pm unless otherwise indicated. Where municipal by-laws or facility rules specify more stringent requirements, comply with such requirements. Incorporate Work hour restrictions into construction schedule.
  - 1.1.3.1 Given that the facility is an operating daycare, noisy or disruptive activities must be avoided between 12:00 pm and 3:00 pm to accommodate the children's naptime.
- 1.1.4 Facility to remain operational: Facility will remain operational during course of The Work Owner will occupy portion of premises throughout construction period. Cooperate with Owner in scheduling to minimize disruptions to activities and facilitate usage of premises.
  - 1.1.4.1 Assume responsibility for care, custody, and control of portion of existing building made available to Contractor and Make Good damage attributable to construction activities. Restore to condition existing before construction activities began.
  - 1.1.4.2 Use premises for construction activities, storage, and access while accommodating Owner occupancy (whether complete or partial), Work by Other Contractors, and public usage.
  - 1.1.4.3 Coordinate use of premises under direction of Owner.
- 1.1.5 Perform construction activities in a manner that prioritizes safety and comfort of building occupants. Implement measures to maintain building access, utility continuity, and to suppress dust and noise.
- 1.1.6 Disruptive Operations: Coordinate operations that cause significant noise, vibration, dust, or odours with Owner. Secure prior written permission for such activities. Provide minimum 72 hours advance notice. Owner reserves the right to request that such activities be performed outside of normal business hours.
- 1.1.7 Utility Interruptions and Shutdowns: Comply with Owner's notification and approval processes for planned utility shutdowns and obtain necessary written permissions. All interruptions require minimum 72 hours advance notice. Owner

reserves the right to request that interruptions are planned outside of normal business hours.

1.1.8 Life Safety Requirements:

1.1.8.1 Comply with applicable requirements of Fire Code in force at Place of the Work.

1.1.8.2 Access and Egress for Occupants: Provide and maintain of safe access and egress routes for construction staff and the building occupants. Maintain clear egress routes at all times.

1.1.8.3 Fire Alarm and Sprinkler Zone Maintenance: Maintain fire alarm zones and sprinkler zones during construction to meet requirements of authorities having jurisdiction.

.1 Determine nature and exact locations of existing fire and smoke sensors prior to the commencement of the Work. Perform Work carefully to avoid triggering sensors.

.2 Costs incurred on account of false fire alarms activated as a result of construction operations without adequate precautions are Contractor's responsibility.

1.1.8.4 Fire Routes: Maintain fire access routes, including overhead clearances, for use by emergency response vehicles.

1.1.9 Driveways, Walkways, and Entrances: Keep driveways, walkways, and entrances clear for Owner and emergency vehicles. Schedule deliveries to minimize disruptions.

1.1.10 Owner's Manual: Owner's manual outlining additional restrictions on Work in existing facility is available and appended to this Section. Restrictions outlined in Owner's manual form an integral part of Contract Documents. Comply with such restrictions at no additional cost to Owner. Refer to Section 00 30 00.

1.1.11 Work on Public or Municipal Property: comply with regulations of municipality and authorities having jurisdiction including associated fees, permits, insurance or bonding required.

1.1.12 Prohibition on Smoking and Controlled Substances: A strict no-tobacco, no-vaping, no-alcohol and no-controlled substances policy is to be enforced on Project site and on Owner's property.

1.1.13 Construction of Temporary Access and Egress:

1.1.13.1 Design and maintain temporary access and egress routes, including stairs, runways, ramps or ladders and scaffolding, independent of finished surfaces; comply with safety and regulatory standards of Authorities Having Jurisdiction. Maintain temporary entrances to building(s) including enclosed hoardings as required.

1.1.13.2 Bridge excavations with construction to safely support loads that could be imposed and provide personnel to assist in deliveries to building(s) as required.

1.1.14 Existing Building Entrance: Maintain access to existing service entrance(s) at all times, including ready access for vehicles.



1.1.15 Restriction of Site Access to Non-Construction Personnel: Limit site access strictly to authorized individuals, except for visitors authorized by Contractor.

1.1.16 Temporary Vehicular Access and Parking: Refer to Section 01 50 00.

## 1.2 WORK SEQUENCE

1.2.1 Phased Construction Schedule: Schedule and construct Work in phases to allow for Owner's and occupants continued or intermittent use of premises during construction. Do not close portions of facilities until alternate usage is made available via completed Work phases.

1.2.2 Maintain operational life safety systems and public access to exits in occupied areas during all phases of the Work.

1.2.3 Work Phases: Refer to phasing diagrams on Drawings for required phases of Work.

1.2.4 Updated Construction Schedule: Before starting Work on each phase, submit updated copy of the Construction schedule. Schedule must indicate sequence, commencement, and completion dates, and, if applicable, move-out and move-in dates for Owner's personnel for all phases of Work.

1.2.5 Coordination with Consultant: Contractor must cooperate and coordinate with Consultant for moving Owner's equipment into the building when Work is ready for intended use.

END OF SECTION

## 1.1 CASH ALLOWANCES, GENERALLY

- 1.1.1 Read in conjunction with: CCDC 2-2020, GC. 4.1 and Supplementary Conditions.
- 1.1.2 Function of Cash Allowances: Disbursements from Cash Allowances are intended for Work not shown or described in the Contract Documents. Cash Allowance disbursements must be authorized by Consultant, through Owner, in writing.
- 1.1.3 Provision of Required Documentation: Owner will provide Contractor with necessary documentation for pricing a cash allowance item.
- 1.1.4 Competitive Pricing Request: Owner may ask Contractor to identify potential Suppliers or Subcontractors and obtain a minimum of three competitive prices for each item.
  - 1.1.4.1 Disclosure of Price Information: Owner may request Contractor to reveal originals of all bids, quotations, and other price-related information from potential Suppliers or Subcontractors.
- 1.1.5 Approval and Responsibility: Owner will decide who performs each cash allowance item and for what amount. Contractor must obtain Owner's prior written approval via Change Order before subcontracting or performing work by own forces for work included in a cash allowance. Contractor's responsibilities for such items are same as other Contract work once Change Order is issued.
- 1.1.6 Scheduling for Ordering: Prepare a schedule jointly with Consultant to ensure for timely authorization of items under cash allowances. Coordinate and process submittals for allowance items similarly to those of other portions of the Work.
- 1.1.7 Materials Coordination: Coordinate materials and installation for each allowance with related materials to ensure complete integration.
- 1.1.8 Reallocation of Unexpended Amounts: If actual cost under a cash allowance exceeds cash allowance amount, unexpended amounts from other allowances may be reallocated by Consultant to cover the shortfall.
  - 1.1.8.1 No Additional Overhead and Profit: In case of reallocation, no additional amount for overhead and profit may be added to Contract Price.
  - 1.1.8.2 Compensation for Overall Excess Costs: If actual cost under all cash allowances exceeds total of all allowances, Contractor will be compensated for substantiated excess costs. Compensation to include an amount for overhead and profit on the excess amounts only. Refer to Section 01 26 00 for administrative procedures related to changes in the Work.

## 1.2 CASH ALLOWANCES FOR SUPPLY ONLY OF PRODUCTS

- 1.2.1 Inclusions: Includes cost of Products as invoiced by Supplier, delivery, and applicable taxes, excluding Value Added Taxes.
- 1.2.2 Exclusions: Does not include costs for unloading, handling, storage on site, installation, other related costs, overheads, and profits. Include such costs in Contract Price and not in cash allowance.

**1.3 CASH ALLOWANCES FOR SUPPLY AND INSTALLATION OF PRODUCTS**

- 1.3.1 Inclusions: Includes all costs to provide specified Products, including supply, installation, and related costs, excluding Value Added Taxes.
- 1.3.2 Exclusions: Does not include Contractor's, Subcontractor's, sub-Subcontractor's overhead and profit, and other related costs. Include such costs in Contract Price and not in cash allowance.

**1.4 CASH ALLOWANCES FOR SERVICES**

- 1.4.1 Inclusions: Includes all costs related to the services, excluding Value Added Taxes, and Subcontractor's and sub-Subcontractor's overheads and profits.
- 1.4.2 Exclusions: Does not include Contractor's overhead and profit, and other related costs. Include such costs in Contract Price and not in cash allowance.

**1.5 LIST OF ALLOWANCES**

- 1.5.1 Provide the allowances as follows:
  - 1.5.1.1 Allowance Name: Phase 1 Signage
    - .1 Allowance Type: Cash Allowance for Services
    - .2 Allowance Description: \$2,000.00 for Phase 1 Project Signage
  - 1.5.1.2 Allowance Name: Phase 2 Signage
    - .1 Allowance Type: Cash Allowance for Supply and Installation
    - .2 Allowance Description: \$2,500.00 for Phase 2 Project Signage

END OF SECTION

## 1.1 DEFINITIONS

1.1.1 The following definitions, in accordance with CCDDC 23 and as modified by this Section will apply to the Work:

1.1.1.1 **Alternative Price:** An “alternative” is defined as anything for which bidders provide a price in a manner that gives the Owner options in determining the actual Work of the Contract. An alternative could be an optional Product, system, installation method, design, requirement, scope of Work, etc. An “alternative price” is defined as the amount stipulated by the bidder for an alternative, which can be stated as an addition, a deduction, or no change to the “base bid price”. The “base bid price” is defined as the amount stated in the bid form, without considering any alternatives or alternative prices. Include as part of each alternative price, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternative price. For the purposes of Contract Documents, the terms “Alternative Price” and “Separate Price” will be considered synonymous.

1.1.1.2 **Unit Price:** A “unit price” is defined as a price for anything on a “per unit” basis (e.g., dollars per lineal metre, per square metre, per cubic metre, per hour, per item, etc.). Unit Prices will include all costs including labour, detailing, material, equipment, overhead, profit and statutory charges required to complete the item of Work. Unit Prices will be used to calculate changes in Contract Price for additional or lesser Work than stipulated in the Contract. Unit Prices will apply to the net change only in the quantities of each unit of Work.

1.1.1.3 **Itemized Price:** An “itemized price” is the bidder’s price for a specific item of Work included in the bid price and is provided for information purposes only. It is not intended to be used to adjust the scope of the Work and the bid price.

## 1.2 PROCEDURES

1.2.1 **Notification:** Immediately following award of the Contract, notify each party involved, in writing, of the status of each price. Indicate if prices have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to prices.

1.2.2 Execute accepted prices under the same conditions as other Work of the Contract.

## 1.3 SCHEDULE OF ALTERNATIVE PRICES

1.3.1 Refer to Bid Forms and accompanying Bid form supplements, but generally as follows:

1.3.1.1 **Alternative Price 1- Phase 2 Work**

.1 **Base Bid Price:** All Work associated with phase 1 as shown on Drawings and covering an area of approximately 217 m<sup>2</sup>

- .2 Alternative Price: Work of phase 2 as shown on Drawings and covering an area of approximately 245 m<sup>2</sup>

#### 1.4 SCHEDULE OF UNIT PRICES

- 1.4.1 Refer to Bid Forms and accompanying Bid form supplements.

END OF SECTION

## 1.1 DEFINITIONS

- 1.1.1 Substitution: In this Section "Substitution" means a Product, a manufacturer, or both, not originally specified in Contract Documents by proprietary name but proposed for use by Contractor in place of a Product, a manufacturer, or both, specified by proprietary name.
- 1.1.2 Substitutions for Cause: Substitution proposed due to altered Project conditions like Product unavailability, regulatory changes, or warranty issues.
- 1.1.3 Substitutions for Convenience: Substitution proposed due to perceived benefits, that may not necessarily be required for fulfill Project requirements.

## 1.2 RESTRICTIONS ON SUBSTITUTIONS

- 1.2.1 Adherence to Specifications: Use specified materials and manufacturers unless otherwise stated.
- 1.2.2 Bidding Period: Refer to Section 00 21 13.
- 1.2.3 Substitutions for Convenience: Generally not permitted.
- 1.2.4 Substitutions for Cause: Substitutions for Cause during construction period may be proposed by Contractor when the terms "or approved equivalent", "or approved equal" or similar terms are used.
  - 1.2.4.1 Do not construe such language as invitation to unilaterally provide a Substitution without Consultant's prior acceptance in writing. Do not order or install Substitutions without Supplemental Instruction or Change Order.
  - 1.2.4.2 Where products are no longer available due to supply chain issues, comply with requirements indicated in Section 01 61 00.
- 1.2.5 Review Process: Consultant will promptly review a proposed Substitution for Cause, provided submission includes all information specified in this Section under Submission Requirements For Proposed Substitutions.
- 1.2.6 Acceptance Criteria: Consultant may accept a Substitution if it can be satisfied that:
  - 1.2.6.1 the proposed substitute Product is the same type as, is capable of performing the same functions as, interfaces with adjacent Work the same as, and meets or exceeds the standard of quality, performance and, if applicable, appearance and maintenance considerations, of the specified Product,
  - 1.2.6.2 the proposed substitute manufacturer has capabilities comparable to the specified manufacturer, and
  - 1.2.6.3 the Substitution provides a benefit to Owner.
- 1.2.7 Invalid Reasons for Substitutions: Delay in ordering specified Product in adequate time to meet construction schedule is not a valid reason for Consultant to accept a Substitution.
- 1.2.8 Documentation of Changes: Accepted Substitutions will documented through a Supplemental Instruction or Change Order. Refer to Section 01 26 00.

- 1.2.9 Reversion Restrictions: Do not revert to original specified Product or manufacturer without Consultant's prior written acceptance.

### 1.3 SUBMISSION REQUIREMENTS FOR PROPOSED SUBSTITUTIONS

- 1.3.1 Substitution Request Form: Use form appended to this Section for all Substitution requests. Failure to use specified form will result in Consultant rejecting Substitution.
- 1.3.2 Include with each proposed Substitution the following information:
- 1.3.2.1 Identification of the Substitution, including Product name and manufacturer's name, address, telephone numbers, and web site.
  - 1.3.2.2 Reason(s) for proposing the Substitution.
  - 1.3.2.3 A statement verifying that the Substitution will not affect the Contract Price and Contract Time or, if applicable, the amount and extent of a proposed increase or decrease in Contract Price and Contract Time on account of the Substitution.
  - 1.3.2.4 A statement verifying that the Substitution will not affect the performance or warranty of other parts of the Work.
  - 1.3.2.5 Manufacturer's Product literature for the Substitution, including material descriptions, compliance with applicable codes and reference standards, performance and test data, compatibility with contiguous materials and systems, and environmental considerations.
  - 1.3.2.6 Product samples as applicable.
  - 1.3.2.7 A summarized comparison of the physical properties and performance characteristics of the specified Product and the Substitution, with any significant variations clearly highlighted.
  - 1.3.2.8 Availability of maintenance services and sources of replacement materials and parts for the Substitution, as applicable, including associated costs and time frames.
  - 1.3.2.9 If applicable, estimated life cycle cost savings resulting from the Substitution.
  - 1.3.2.10 Details of other projects and applications where the Substitution has been used.
  - 1.3.2.11 Identification of any consequential changes in the Work to accommodate the Substitution and any consequential effects on the performance of the Work as a whole. A later claim for an increase to the Contract Price or Contract Time for other changes in the Work attributable to the Substitution will not be considered.

END OF SECTION

### 1.1 PROJECT INFORMATION

Project: \_\_\_\_\_  
From: \_\_\_\_\_  
Date: \_\_\_\_\_

### PROPOSED SUBSTITUTION

#### REFERENCE INFORMATION

Specification Section Number and Title: \_\_\_\_\_

Drawing Reference (if applicable): \_\_\_\_\_

Page: \_\_\_\_\_ Article/Paragraph: \_\_\_\_\_

Specified Product: \_\_\_\_\_

#### SUBSTITUTION INFORMATION

Proposed Substitution (Product Name): \_\_\_\_\_

Product Description: \_\_\_\_\_

Product History:  New Product  2-5 years old  5-10 years old  > 10 years old

Manufacturer: \_\_\_\_\_

Standard Warranty Offered: \_\_\_\_\_ Extended Warranty Available?  Yes  No

Address: \_\_\_\_\_

Name of Technical Representative (TR): \_\_\_\_\_

#### Technical Representative's Contact

Phone \_\_\_\_\_ Email: \_\_\_\_\_



**SLCD-SAC**  
**PROJECT NO.** 24.209  
**ISSUED FOR:** FOR BID  
**DATE:** 2024-07-18

**01 25 00.01**  
**SUBSTITUTION REQUEST FORM**

Trade Name: \_\_\_\_\_

Differences between proposed substitution and specified Product:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Reason for not providing specified item:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Will proposed substitution affect other parts of Work?  No  Yes; explain \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Cost Implications of Proposed Substitutions:  None  Savings/Credit;  Extra Costs (explain below)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

REFERENCE INSTALLATIONS

List below installations that reference the Product installed in projects that are similar in scope and size.  
Provide at least 3 pertinent reference installations

Project NO.1

Project Title: \_\_\_\_\_

Project Description:  Commercial  Residential  Retail  Healthcare  Other: \_\_\_\_\_

Date Installed: \_\_\_\_\_ Location: \_\_\_\_\_

Reference Contact (if known): Phone: \_\_\_\_\_ Email: \_\_\_\_\_

Project NO.2

Project Title: \_\_\_\_\_

Project Description:  Commercial  Residential  Retail  Healthcare  Other: \_\_\_\_\_

Date Installed: \_\_\_\_\_ Location: \_\_\_\_\_

Reference Contact (if known): Phone: \_\_\_\_\_ Email: \_\_\_\_\_

Project NO.3

Project Title: \_\_\_\_\_

Project Description:  Commercial  Residential  Retail  Healthcare  Other: \_\_\_\_\_

Date Installed: \_\_\_\_\_ Location: \_\_\_\_\_

Reference Contact (if known): Phone: \_\_\_\_\_ Email: \_\_\_\_\_

**SUSTAINABLE INFORMATION**

Indicate below sustainable information that apply to this Product.

**MANUFACTURING LOCATION**

What is the location of the manufacturing plant for this particular Product?

\_\_\_\_\_

**ENVIRONMENTAL Product DECLARATION (EPD)**

Does the Product have a compliant environmental Product declaration (EPD)?  Yes  No

EPD Type:  Industry Wide EPD  Product Specific EPD

Indicate EPD expiry date: \_\_\_\_\_

**MATERIALS AND RESOURCES**

Does the Product contain wood Products?  Yes  No

If yes, Indicate percentage of FSC Certified wood in Product: \_\_\_\_\_

Indicate wood Product low-emitting characteristics:

No Added Urea Formaldehyde (NAUF)  Ultra-low Emitting Formaldehyde (ULEF)

Does the Product contain post-consumer or pre-consumer recycled content?  Yes  No

If yes, Indicate percentage of pre-consumer recycled content: \_\_\_\_\_

If yes, Indicate percentage of post-consumer recycled content: \_\_\_\_\_

**DISCLOSURE AND TRANSPARENCY**

Does the Product participate in extended producer responsibility program?  Yes  No

Does the Product have a "Declare" label with ingredient disclosure greater than 1000 ppm?  Yes  No

Does the Product have a Fully Declare Health Product Declaration?  Yes  No

Is this Product CDPH Emissions testing compliant?  Yes  No

Indicate Product VOC content (g/l): \_\_\_\_\_

**SUPPORTING DATA**

Attached data includes Product description, Specifications, Drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation

Supporting Data Attached:  Drawings  Product Data  Samples  Test Reports

**FOR INTERNAL USE ONLY**

Substitution approved - Make submittals in accordance with Section 01 25 00.

Substitution approved as noted - Make submittals in accordance with Section 01 25 00.

Substitution rejected - Use specified materials.

**DECLARATIONS**

I/We the undersigned agree that the Owner reserves the right to accept or reject any or all the proposed substitution/alternatives and may request that materials specified in the Bidding and Contracting Documents be used.

I/We the undersigned understand that by submitting this Substitution Request, I/We assume full responsibility for ensuring that all requirements are considered.

I/We hereby certify that:

Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified Product.

Same warranty will be supplied for proposed substitution as for specified Product.

Same maintenance service and source of replacement parts, as applicable, is available.

Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.

Proposed substitution does not affect dimensions and functional clearances.

Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

SLCD-SAC  
PROJECT NO. 24.209  
ISSUED FOR: FOR BID  
DATE: 2024-07-18

01 25 00.01  
SUBSTITUTION REQUEST FORM

SUBMITTED BY: \_\_\_\_\_

Signature of  
Duly Authorized  
Signing Officer \_\_\_\_\_

\_\_\_\_\_  
Affix Seal Here

Position: \_\_\_\_\_

Firm: \_\_\_\_\_

Street Address: \_\_\_\_\_

City, Province, Postal Code \_\_\_\_\_

Phone: \_\_\_\_\_

Respectfully submitted this \_\_\_\_ day of \_\_\_\_\_, 20\_\_ at \_\_\_\_\_.

END OF SECTION

## 1.1 SUMMARY

- 1.1.1 Purpose of Section: Section specifies administrative procedures related to modifying Contract by means of Change Orders, Change Directives, and Supplemental Instructions.
- 1.1.2 Read in conjunction with: CCDC 2-2020, Part 6, Changes in the Work and Supplementary Conditions.

## 1.2 SCHEDULE OF LABOUR RATES

- 1.2.1 Prior to the first application for payment, submit for the Consultant's review a schedule of labour rates for all trades and classifications of trades, such as journeymen, apprentices, and foremen that will be employed in the Work. Provide a breakdown of payroll burden component of labour rates.
- 1.2.2 Labour rates shall reflect the salaries, wages, and benefits paid to personnel in the direct employ of the Contractor, Subcontractors, and sub-Subcontractors, stated as hourly rates, that will be used when:
  - 1.2.2.1 preparing price quotations for Change Orders, and
  - 1.2.2.2 determining the cost of Work attributable to Change Directives.
- 1.2.3 Labour rates stated in the schedule of labour rates shall be consistent with rates that will actually be paid, and payroll burden costs that will actually be incurred, in the normal performance of the Work, during regular working hours. Labour rates shall not include any additional overhead and profit component.
- 1.2.4 Where collective agreements apply, the labour rates shall not exceed those established by collective agreement.
- 1.2.5 Obtain the Owner's written acceptance of the schedule of labour rates before submitting the first Change Order quotation.
- 1.2.6 Accepted schedule of labour rates will be used solely for evaluating Change Order quotations and cost of performing Work attributable to Change Directives.
- 1.2.7 The Contractor may request amendments to the accepted schedule of labour rates if changes in the labour rates that will actually be paid, or payroll burden cost that will actually be incurred, in the normal performance of the Work can be demonstrated. Obtain the Owner's written acceptance of such changes.

## 1.3 SCHEDULE OF EQUIPMENT RATES

- 1.3.1 Prior to the first application for payment, submit for the Consultant's review a schedule of equipment rates for Contractor owned Construction Equipment.
- 1.3.2 Equipment rates shall reflect the rates that will be used when:
  - 1.3.2.1 preparing price quotations for Change Orders, and
  - 1.3.2.2 determining the cost of Work attributable to Change Directives.
- 1.3.3 Equipment rates stated in the schedule shall be consistent with local equipment rental market rates and shall not include any additional overhead and profit component.
- 1.3.4 Obtain the Owner's written acceptance of the schedule of equipment rates before submitting the first Change Order quotation.

- 1.3.5 Accepted schedule of equipment rates will be used solely for evaluating Change Order quotations and cost of performing Work attributable to Change Directives.
- 1.3.6 The Contractor may request amendments to the accepted schedule of equipment rates if changes in local equipment rental market rates can be demonstrated. Obtain the Owner's written acceptance of such changes.

#### **1.4 VALUATION OF CHANGES BASED ON AGREED UNIT PRICES**

- 1.4.1 The Consultant may, at the outset of the Contract or at any other time, request the Contractor to submit unit prices anticipated to be required in valuing changes in the Work.
- 1.4.2 The Contractor shall submit such unit prices promptly upon request.
- 1.4.3 The unit prices shall be valid for a specified duration agreed upon by Owner and Contractor.
- 1.4.4 The unit prices shall exclude all fees for overhead and profit and shall be subject to the percentage fees specified in this Section under Fees for Overhead and Profit – Change Orders.
- 1.4.5 The Consultant will evaluate the Contractor's quoted unit prices and, if accepted by the Owner in writing, the agreed unit prices shall be used to value subsequent proposed changes in the Work wherever they are applicable.

#### **1.5 METHOD OF CONTRACT PRICE ADJUSTMENT - CHANGE ORDERS**

- 1.5.1 Unless otherwise agreed, the adjustment of the Contract Price on account of a proposed change in the Work shall be based on a quotation for a fixed price increase or decrease to the Contract Price regardless of the Contractor's actual expenditures and savings.
- 1.5.2 If unit prices included in the stipulated price Contract are applicable to the proposed change, the adjustment of the Contract Price shall be based on those unit prices, to the extent they apply.
- 1.5.3 Unless otherwise agreed, the adjustment of Unit Prices affected by a proposed change in the Work shall be based on a quotation for an increase or decrease to existing Unit Prices, or new Unit Prices, as applicable, regardless of the Contractor's actual expenditures and savings.

#### **1.6 CHANGE ORDER PROCEDURES**

- 1.6.1 Any variation in the Contract involving a change in total amount of Contract Price or in Contract Time shall be initiated through Consultant in form of a proposed change in the Work (Contemplated Change Order / Contemplate Change Notice or CCO/CCN) describing Work proposed under variation and requesting a quotation from Contractor.
- 1.6.2 Upon issuance by the Consultant to the Contractor of a proposed change in the Work, and unless otherwise requested in the proposed change or unless otherwise agreed:
  - 1.6.2.1 Submit to the Consultant a fixed price quotation for the proposed change in the Work within 5 days after receipt of the proposed change in the Work.

- 1.6.2.2 If requested in the proposed change, provide a detailed breakdown of the price quotation including the following to the extent applicable, with appropriate supporting documentation:
- .1 Estimated labour costs, including hours and applicable hourly rates based on the accepted schedule of labour rates.
  - .2 Estimated Product costs, including Supplier quotations, estimated quantities and unit prices.
  - .3 Estimated Construction Equipment costs.
  - .4 Enumeration of all other estimated costs included in the price quotation.
  - .5 Estimated credit amounts for labour and Products not required on account of the proposed change.
  - .6 Fees, not exceeding the applicable percentages for overhead and profit as specified in this Section.
  - .7 Where applicable, Subcontractor quotations, also including a detailed breakdown of all of the above.
- 1.6.2.3 Include in the quotation the increase or decrease to the Contract Time, if any, for the proposed change, stated in number of days.
- 1.6.2.4 Include in the quotation the number of days for which the quotation is valid.
- 1.6.2.5 The quotation will be evaluated by the Consultant and the Owner and, if accepted by the Owner, be documented in the form of a signed Change Order.

## **1.7 METHOD OF CONTRACT PRICE ADJUSTMENT - CHANGE DIRECTIVES**

- 1.7.1 Unless the Owner and the Contractor reach an earlier agreement on the adjustment to the Contract Price by means of a Change Order that cancels the Change Directive, the adjustment in the Contract Price for change carried out by way of a Change Directive shall be determined as specified in the General Conditions of Contract after the change in the Work is completed.

## **1.8 CHANGE DIRECTIVE PROCEDURES**

- 1.8.1 Change Directives (CD) are instructions for Contractor to carry out change in the Work, which will be included in a subsequent Change Order. Owner will issue Change Directives through the Consultant, providing a complete description of the required changes.
- 1.8.2 If a Change Directive is issued for a change in the Work for which a proposed change was previously issued, but no Change Order has yet been signed, the Change Directive shall cancel the proposed change and any Contractor quotations related to that change in the Work.
- 1.8.3 When proceeding with a change in the Work under a Change Directive, keep accurate records of daily time sheets for labour and Construction Equipment, and invoices for Product and Construction Equipment costs. Submit such records to the Consultant daily, until the Change Order superseding the Change Directive is issued.



## 1.9 CONTRACTOR'S FEES ON CHANGE ORDERS AND CHANGE DIRECTIVES

1.9.1 The table below outlines the mark-ups that represent the total compensation the Contractor will receive for any changes to the Work. This compensation covers all associated costs, including overhead, profit, general expenses, and incidental and administrative costs. Such costs include superintendence, supervision, general cleanup, Shop Drawing production, estimating, site and home office expenses, personnel, administration, workers' tools, temporary facilities and controls, record drawings, As-Built Drawings, warranty, insurance, bonding, job safety, and coordination of all Work-related activities.

<b>Net Value of Change (excluding Value Added Taxes)</b>	<b>Contractor's Mark-Up on Own Forces Work and on Subcontracted Work</b>	<b>Subcontractor's Mark-Up on Subcontractor Work</b>
Any net decrease (credit)	0%	0%
\$0 - \$5,000	7%	10%
\$5,0001 or greater	5%	10%

- 1.9.2 Contractor's fees on Changes specifically exclude the work of Phase 2 (Alternative) if such work is negotiated to be carried out as a Change to the Contract. For greater clarity, Contractor's proposed price for Phase 2 is to be inclusive of all overhead and profit associated with such work.
- 1.9.3 No claims for changes in Contract Time, delays, prolongation charges, remobilization, or similar issues will be permitted unless authorized by the Consultant and approved by the Owner in a Change Order. An adjustment to the Contract Time will be considered only if the Contractor demonstrates that a change affects the critical path of the Work. Any costs associated with a Contract Time adjustment must be specifically identified by the Contractor and limited to reasonable direct costs directly attributable to the time adjustment.
- 1.9.4 The Contractor will not receive additional compensation or an adjustment to the Contract Time for changes to the Work beyond what is specified in a Change Order. The Owner will not be liable for any costs, including indirect, impact, or consequential costs, resulting from changes to the Work beyond the agreed amount in the Change Order.
- 1.9.5 If any change in The Work decreases the amount of Work to be performed, or if the whole or a portion of The Work is dispensed with, no compensation is claimable by the Contractor for any loss of anticipated profit, loss of productivity, or any increased coordination costs in respect thereof.
- 1.9.6 Where a Change Order results in a net decrease in the price of the Work before adjustment for fees for overhead and profit, the value of the credit shall be for the net decrease in the price of the work without any adjustment or decrease for the Contractor's overhead and profit.

## 1.10 SUPPLEMENTAL INSTRUCTIONS

- 1.10.1 The Consultant may issue Supplemental Instructions to provide clarifications to the Contract Documents, provide additional information, or make minor variations in the Work not involving adjustment in the Contract Price or Contract Time.
- 1.10.2 If the Contractor considers a Supplemental Instruction to require an adjustment in Contract Price or Contract Time, the Contractor shall promptly notify the Consultant and the Owner in writing and shall not proceed with any Work related to the Supplemental Instruction pending receipt of a Change Order, a Change Directive, or, in accordance with the dispute resolution provisions of the General Conditions of Contract, a Notice in Writing of a dispute and instructions to proceed.

END OF SECTION

## 1.1 GENERAL

- 1.1.1 Interpretation and Modification Authority: Only Consultant have authority to interpret and modify Construction Documents. Contractor may forward requests for interpretation or modification to Consultant as required.
- 1.1.2 Requests for Interpretations: Submit RFI immediately upon identifying need for further information or clarification of Contract Documents to avoid delays. RFIs from entities that are not directly under Contractor's control will be returned without response.
- 1.1.3 Supplementary Instructions: Interpretations of Construction Documents by Consultant will be provided in writing by means of Supplementary Instructions (SIs).
  - 1.1.3.1 SIs do not intend to modify Contract Price. RFIs affecting Contract Time or Contract Price will be subject to Contract modification procedures specified in Section 01 26 00.
  - 1.1.3.2 Contractor must notify of changes to Contract Price or Contract Time that arise from response to RFI within 5 Working Days of RFI response.
- 1.1.4 Consultant's Action: Allow 5 Working Days for response to RFIs. Responses may request additional information, in which case response timeline will be restarted.
- 1.1.5 Non-Binding Interpretations: Responses to questions, interpretations, and modifications are not to be considered binding or effective unless issued as a formal written SI by Consultant.

## 1.2 RFI PROCEDURES

- 1.2.1 RFI Content: Each RFI must clearly detail query and include following as a minimum:
  - 1.2.1.1 Project Name
  - 1.2.1.2 Owner Name.
  - 1.2.1.3 Project number.
  - 1.2.1.4 Date
  - 1.2.1.5 Contractor's name.
  - 1.2.1.6 Sequential RFI number
  - 1.2.1.7 Subject.
  - 1.2.1.8 Relevant Specification Sections, drawing references, and field conditions.
  - 1.2.1.9 Proposed resolution and impact on Contract Time or Contract Price.
  - 1.2.1.10 Contractor's signature
  - 1.2.1.11 Additional attachments.
- 1.2.2 Update and distribute RFI responses promptly to Subcontractors. Notify Consultant within 5 Working Days of any disagreements with RFI responses. Beyond this period, RFIs will be considered resolved.

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**DATE:** 2024-07-18

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**01 26 13**  
**REQUESTS FOR INFORMATION**

- 1.2.3 RFI Log: Contractor will maintain a log of RFIs with Project details, RFI tracking, and related change documentation.

END OF SECTION

## 1.1 SUMMARY

- 1.1.1 Purpose of Section: Section specifies administrative procedures related to progress payments and final payment for The Work.
- 1.1.2 Read in conjunction with: CCDC 2-2020, Part 5, Payment.

## 1.2 SCHEDULE OF VALUES

- 1.2.1 Initial Submission and Review: Prior to the first application for payment, submit for Consultant's review an initial schedule of values. Modify the initial schedule of values if and as requested by Consultant. Obtain Consultant's written acceptance of the initial schedule of values prior to the first application for payment.
- 1.2.2 Updated Schedule with Applications for Payment: Together with the first and all subsequent applications for payment, submit updated versions of the schedule of values to indicate the values, to the date of application for payment, of Work performed and Products delivered to Place of the Work.
- 1.2.3 Format and Content: Provide the schedule of values in an electronic spreadsheet format based on format provided and content described in latest edition of CCDC 24 – A Guide to Model Forms and Support Documents or a format acceptable to Consultant and Owner.
- 1.2.4 Required Information in Schedule: Provide the schedule of values in an electronic spreadsheet format that provides for inclusion of the following information:
  - 1.2.4.1 Identifying information including title and location of the Work, name of Contractor, number and date of application for payment, and period covered by the application for payment.
  - 1.2.4.2 A Work breakdown structure based on Contractor, Subcontractor and sub-Subcontractor Work according to each Specification section, and material and labour breakdown. Include separate line items for closeout procedures including closeout submittals, demonstration and training, start-up and testing, and commissioning collectively valued at minimum 0.5% of Contract Price.
  - 1.2.4.3 Provisions for approved Change Orders, allowances, and unit price Work so that the breakdown amounts indicated in the schedule of values aggregate to the current total Contract Price. Also provide for indicating the estimated value of Change Directives within the schedule of values, separately from the current total Contract Price.
  - 1.2.4.4 For each item in the Work breakdown structure, provide as a minimum the following information, under headings as indicated:
    - .1 Breakdown Amount: A dollar amount, including an appropriate pro rata portion of Contactor's overhead and profit.
    - .2 Performed to Date: The value of Work performed and Products delivered to Place of the Work up to the date of the application for payment, stated as a percentage of the Contract Price and in dollars.

- .3 Previously Performed: The value of Work performed and Products delivered to the Place of the Work for which payment has been previously certified, stated in dollars.
- .4 Current Period: The value of Work performed and Products delivered to Place of the Work for which Contractor is currently applying for payment, stated in dollars.
- .5 Balance to Complete: The value of Work not yet performed and Products not yet delivered to Place of the Work, stated in dollars.

### 1.3 CASH FLOW PROJECTION

- 1.3.1 Prior to the first application for payment submit, for Consultant's review, a forecast of approximate monthly progress payments for each month of the Contract Time.
- 1.3.2 Submit revised cash flow forecasts at least monthly. Consultant may also require revised cash flow forecasts when required due to significant changes in rate of progress of the Work or significant changes in the Contract Price.

### 1.4 WORKERS' COMPENSATION CLEARANCE

- 1.4.1 Submit proof of workers' compensation clearance (i.e. Workplace Safety and Insurance Board (WSIB)) with each application for payment.

### 1.5 STATUTORY DECLARATIONS

- 1.5.1 Submit a statutory declaration in the form of CCDC 9A – Statutory Declaration of Progress Payment Distribution by Contractor with each application for payment except the first.

### 1.6 RELEASE OF HOLDBACK

- 1.6.1 Read in conjunction with: CCDC 2, 2020 GC 5.4 and Supplementary Conditions
- 1.6.2 In accordance, with requirements of Construction Act and General Conditions and Supplementary Conditions of the Contact, Owner may consider possibility of releasing holdback annually or on a phased basis, provided that requisite conditions have been satisfied.

### 1.7 "PROPER INVOICE" PROCEDURES

- 1.7.1 Payment Review Meeting:
  - 1.7.1.1 Consultant will organize payment review meeting at least 5 calendar days before end of each monthly billing period.
  - 1.7.1.2 Meeting must occur prior to submitting applications for payment.
- 1.7.2 Payment Review Meeting Agenda:
  - 1.7.2.1 Contractor's draft invoice, status of Change Orders and Change Directives, schedule of values, construction schedule, holdbacks, and net amount due for billing period will be reviewed jointly with Owner and Consultant.
- 1.7.3 Draft Invoice Submission:

- 1.7.3.1 Send draft invoices to Consultant and Owner via email at least one Working Day before payment review meeting.
- 1.7.3.2 Ensure claimed amounts reflect value of Work performed and Products delivered to site to date.
- 1.7.4 Marked-up Draft Invoice:
  - 1.7.4.1 Consultant and Owner will provide revised copy of draft invoice no later than 5 calendar days after payment review meeting.
- 1.7.5 "Proper Invoice" Submission:
  - 1.7.5.1 Submit "proper invoice" via email to Consultant and Owner no later than 7 calendar days after billing period ends.
  - 1.7.5.2 Do not use courier or other delivery forms for invoice submission.
  - 1.7.5.3 Send "proper invoice" to Lume Mansaku
    - .1 [lmansaku@stlawrencedaycare.com](mailto:lmansaku@stlawrencedaycare.com)

END OF SECTION

## 1.1 SUMMARY

- 1.1.1 Purpose of Section: Section specifies administrative procedures related to Project management, Project coordination and Project meetings.
- 1.1.2 Read in conjunction with: CCDC 2-2020, Part 3, Execution of the Work.

## 1.2 CONTRACTOR'S LIST OF PERSONNEL AND SUBCONTRACTORS

- 1.2.1 Preparation and Submission: Prepare and submit a complete written list of individuals or firms proposed for each portion of the Work complete with Name, address, telephone number, and email address of entity. In addition, submit list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses, telephone numbers, and e-mail addresses.
- 1.2.2 Displaying List: Display copies of list in Project meeting room, temporary field office, and in a prominent location. Maintain list up-to-date at all times.
- 1.2.3 Compatibility of Construction Team: Ensure compatibility within Project team, especially between Subcontractors. Owner takes no responsibility for incompatibility (labour and otherwise) among Subcontractors and Suppliers employed on the Project.
- 1.2.4 Superintendent Appointment: Appoint a senior member of staff as full-time superintendent, with full authority to commit Contractor to methods and construction schedules. Full-time superintendent shall actively participate in administration and maintenance of construction schedule. Do not replace superintendent without Owner's or Consultant's approval.

## 1.3 CONTRACTOR'S ADMINISTRATIVE RESPONSIBILITIES FOR MEETINGS

- 1.3.1 Unless otherwise indicated, Contractor's responsibilities for all Project meetings are as follows:
  - 1.3.1.1 Schedule and conduct meetings throughout the course of The Work, including those requested at the call of Consultant or Owner, at Project site unless otherwise indicated.
  - 1.3.1.2 Prepare agenda for meetings. Distribute the agenda to all invited attendees.
  - 1.3.1.3 Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Consultant of scheduled meeting dates and times a minimum of 5 Working Days prior to scheduled meeting dates and times.
  - 1.3.1.4 Provide physical space and make arrangements for meetings.
  - 1.3.1.5 Preside at meetings.
  - 1.3.1.6 Record meeting minutes. Include significant proceedings and decisions. Identify actions by parties.
  - 1.3.1.7 Distribute copies of minutes within three Working Days of meetings and transmit to meeting participants and, affected parties not in attendance.



## 1.4 CONSTRUCTION START-UP MEETING

- 1.4.1 After award of Contract, but no later than 15 calendar days after award of Contract, request meeting of parties in Contract to discuss and resolve administrative procedures and responsibilities.
- 1.4.2 Distribute meeting agenda including relevant items pertaining to administrative, financial, scheduling, health and safety requirements.
- 1.4.3 Attendees:
  - 1.4.3.1 Authorized representative of Consultant, Subconsultants, Owner, Contractor, including superintendent, major Subcontractors, major Suppliers, and other concerned parties must be in attendance.
  - 1.4.3.2 Participants at the meeting must be familiar with Project and authorized to conclude matters relating to the Work.
- 1.4.4 Agenda: Discuss items of significance that could affect progress, including but not limited to the following:
  - 1.4.4.1 Tentative construction schedule and progress schedule.
  - 1.4.4.2 Building permit status.
  - 1.4.4.3 Bonds and insurance certificates.
  - 1.4.4.4 Phasing.
  - 1.4.4.5 Critical Work sequencing, and long-lead items.
  - 1.4.4.6 Designation of key personnel and their duties.
  - 1.4.4.7 Lines of communications.
  - 1.4.4.8 Procedures for processing field decisions and Contract modifications including, but not limited to proposed changes (contemplated Change Orders), Change Orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, and other administrative requirements.
  - 1.4.4.9 Procedures for RFIs.
  - 1.4.4.10 Procedures for testing and inspecting.
  - 1.4.4.11 Procedures for processing applications for progress payment including, monthly progress claims, administrative procedures, photographs, and holdbacks.
  - 1.4.4.12 Distribution of the Contract Documents.
  - 1.4.4.13 Submittal procedures, including schedule of submission of Shop Drawings, samples, colour chips.
  - 1.4.4.14 Preparation of closeout documents including, As-Builts, maintenance manuals, take-over procedures, and warranties.
  - 1.4.4.15 Working hours.
  - 1.4.4.16 Owner's occupancy requirements.
  - 1.4.4.17 Work restrictions for Work in occupied buildings such as elevator, washroom or cafeteria use.
  - 1.4.4.18 Owner's special requirements for Contractors performing Work in existing facilities, including path of construction activities (foot,

vehicular, carts), interruption of services, no-smoking policies and similar restrictions.

- 1.4.4.19 Procedures for disruptions and shutdowns, including bin locations.
- 1.4.4.20 Parking availability and procedures.
- 1.4.4.21 Responsibility for temporary facilities and controls including but not limited to, site signage, offices, storage sheds, utilities, hoarding and similar temporary construction.
- 1.4.4.22 Procedures for moisture and mould control.
- 1.4.4.23 Construction waste management and recycling.
- 1.4.4.24 Office, Work, and storage areas.
- 1.4.4.25 Equipment deliveries and priorities.
- 1.4.4.26 Health and Safety.
- 1.4.4.27 Security.
- 1.4.4.28 Progress cleaning and housekeeping procedures.
- 1.4.4.29 Owner-supplied products, where applicable.
- 1.4.4.30 Appointment of inspection and testing agencies or firms.
- 1.4.4.31 Insurances, and transcripts of policies.

## **1.5 CONSTRUCTION PROGRESS MEETINGS**

- 1.5.1 Schedule regular weekly construction progress meetings for the duration of the Work. Contractor shall prepare meeting agendas, chair the meetings, and record and distribute the minutes.
- 1.5.2 Arrange for and provide physical space for meetings.
- 1.5.3 Contractor shall record in the meeting minutes significant decisions and identify action items and action dates by attendees or the parties they represent.
- 1.5.4 Contractor shall distribute copies of minutes within three Working Days after each meeting to meeting attendees and any affected parties who may not be in attendance.
- 1.5.5 Ensure that Subcontractors attend as and when appropriate to the progress of the Work.
- 1.5.6 Agenda for each meeting shall include the following, as a minimum:
  - 1.5.6.1 Approval of minutes of previous meeting.
  - 1.5.6.2 Work progress since previous meeting.
  - 1.5.6.3 Field observations, including any problems, difficulties, or concerns.
  - 1.5.6.4 Construction progress schedule.
  - 1.5.6.5 Submittals schedule.
  - 1.5.6.6 Proposed changes in the Work.
  - 1.5.6.7 Requests for information.
  - 1.5.6.8 Site safety issues.
  - 1.5.6.9 Other business.

- 1.5.7 If mutually agreed by all parties, Owner/Consultant/Contractor (OCC) Progress meetings may be scheduled to review general Project status, financial status and construction schedule.
  - 1.5.7.1 Frequency: monthly, or on a mutually acceptable schedule.
  - 1.5.7.2 Attendees: at least one senior representative of Owner, Consultant and Contractor. Other attendees may be invited on a case-by-case basis.
  - 1.5.7.3 Agenda: As a minimum, prepare to discuss the following:
    - .1 Review, approval of minutes of previous meeting.
    - .2 Status of Proposed Changes (Contemplated Change Orders), Change Orders, and Change Directives.
    - .3 Review of proposed changes for effect on construction schedule.
    - .4 Problems which impede construction schedule.
    - .5 Corrective measures and procedures to regain projected schedule.
    - .6 Revisions to construction schedule.
    - .7 Status of submittals.
    - .8 Other business.

## 1.6 PREINSTALLATION MEETINGS

- 1.6.1 Conduct a preinstallation meeting at Project site before each construction activity when required by Specifications Sections and when required for coordination with other construction.
- 1.6.2 Attendees:
  - 1.6.2.1 Invite Subcontractor and representatives of manufacturers and fabricators involved in, or affected, by the Work of the trade involved and its coordination or integration with other materials and installations that have preceded or will follow.
  - 1.6.2.2 Invite Consultant, Owner and inspection and testing company's representative who may elect to attend.
- 1.6.3 Agenda: Discuss following items as a minimum:
  - 1.6.3.1 Work included.
  - 1.6.3.2 Materials to be used.
  - 1.6.3.3 Storage and handling of materials.
  - 1.6.3.4 Installation procedures.
  - 1.6.3.5 Sequence and quality control.
  - 1.6.3.6 Project staffing.
  - 1.6.3.7 Review of mockups.
  - 1.6.3.8 Possible conflicts.
  - 1.6.3.9 Compatibility requirements.
  - 1.6.3.10 Time schedules.
  - 1.6.3.11 Weather limitations.

- 1.6.3.12 Manufacturer's written instructions.
- 1.6.3.13 Warranty requirements.
- 1.6.3.14 Acceptability of substrates.
- 1.6.3.15 Temporary facilities and controls.
- 1.6.3.16 Restrictions on areas of Work and other matters affecting construction including space and access limitations.
- 1.6.3.17 Regulations of authorities having jurisdiction.
- 1.6.3.18 Testing and inspecting requirements.
- 1.6.3.19 Coordination with other Work.
- 1.6.3.20 Required performance results.
- 1.6.3.21 Protection of adjacent Work.
- 1.6.3.22 Protection of construction and personnel.
- 1.6.4 Reporting: Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
  - 1.6.4.1 Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of The Work and reconvene the conference at earliest feasible date.

END OF SECTION

## 1.1 SUMMARY

- 1.1.1 Purpose of Section: Section specifies Contractor's responsibilities for preparation and submission of schedules and other documentation related to tracking construction progress.
  - 1.1.1.1 Schedules inform Owner and Consultant of actual progress versus planned progress and provide assurance that scheduling issues are being proactively identified and addressed in a timely manner, and that planned progress is being maintained as closely as possible.
- 1.1.2 Read in conjunction with: CCDC 2-2020, Part 3, Execution of the Work.

## 1.2 CONSTRUCTION SCHEDULE

- 1.2.1 Refer to CCDC 2, 2020, GC. 3.4 and Supplementary Conditions.
- 1.2.2 Format and Content:
  - 1.2.2.1 Submit a comprehensive, fully developed, detailed horizontal bar chart (GANNT) construction schedule with activities itemized to enable Owner and Consultant to monitor progress of The Work.
  - 1.2.2.2 Prepare schedule in the form of a Critical Path Method (CPM) Gantt chart using appropriate scheduling software (MS Project or similar)
  - 1.2.2.3 Provide a Work breakdown structure identifying key activities, Work packages, and major milestones, including long delivery Products, inspection and testing activities, preparation and review of mock-ups, Owner decisions for cash allowances, shutdown or closure activities, delivery of Owner supplied Products, Owner performed Work, demonstration and training activities, and similar items, at a sufficient level of detail to effectively manage construction progress.
  - 1.2.2.4 Indicate milestone dates for Ready-for-Takeover and Substantial Performance of the Work as applicable.
  - 1.2.2.5 Constraints: Include constraints and Work restrictions indicated in the Contract Documents including, but not limited to, phasing, Work by Owner and Owner-supplied Products (if any), and Work restrictions, and show how the sequence of the Work is affected.
- 1.2.3 Submission:
  - 1.2.3.1 Submit initial schedule to Owner and Consultant within 10 Working Days after Contract award.
  - 1.2.3.2 Submit schedule via e-mail as .pdf file.
  - 1.2.3.3 Consultant will review format and content of initial schedule and request necessary changes, if any, within 5 Working Days after receipt.
  - 1.2.3.4 If changes are required, resubmit finalized initial schedule within 5 Working Days after return of reviewed copy.
  - 1.2.3.5 Submit updated progress schedule monthly to Owner and Consultant, indicating actual and projected start and finish dates with report date line and progress, activity relationships, critical path, float, and baseline comparison to current progress.

- .1 Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule.
- .2 Determine how construction behind schedule will be expedited and secure commitments from parties involved to do so.
- 1.2.3.6 At progress meeting, discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
- 1.2.3.7 Discuss construction schedule at progress site meetings, and identify activities that are behind schedule and provide measures to regain slippage.
- 1.2.3.8 Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the minutes of each such meeting.
- 1.2.3.9 As the Work progresses, indicate completion percentage for each activity.
- 1.2.3.10 Distribute copies of approved schedule to Consultant, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

### 1.3 SHORT-TERM / LOOK-AHEAD SCHEDULE

- 1.3.1 On a bi-weekly basis, prepare for discussion at progress meetings, a three-week short-term "look-ahead" schedule based on construction schedule. Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next construction schedule update.
- 1.3.2 Provide sufficient information on progress of The Work to enable a status report to be produced on a bi-weekly basis. Indicate on short-term schedule, construction activities that the Owner and Consultant deem necessary.

### 1.4 SCHEDULE OF SUBMITTALS

- 1.4.1 Format and Content:
  - 1.4.1.1 Prepare schedule identifying all required Shop Drawing, Product data, and sample submissions, including samples required for testing and including those for Owner supplied Products (if any).
  - 1.4.1.2 Prepare schedule in electronic format.
  - 1.4.1.3 Provide a separate line for each required submittal, organized by Specifications section names and numbers, and further broken down by individual Products and systems as required.
  - 1.4.1.4 For each required submittal, show planned earliest date for return of reviewed submittal by Consultant and latest date for return of reviewed submittal without causing delay.
  - 1.4.1.5 Allow time in schedule for resubmission of submittals, should resubmission be necessary.
- 1.4.2 Submission:

- 1.4.2.1 Submit initial schedule to Consultant within 20 Working Days after Contract award.
- 1.4.2.2 Submit schedule via e-mail as .pdf file.
- 1.4.2.3 Consultant will review format and content of initial schedule and request necessary changes, if any, within 5 Working Days after receipt.
- 1.4.2.4 If changes are required, resubmit finalized schedule within 5 Working Days after return of review copy.
- 1.4.2.5 Submit updated submittals schedule monthly to Owner and Consultant.

## **1.5 SCHEDULE MANAGEMENT**

- 1.5.1 A schedule submitted as specified and accepted by Consultant shall become the baseline schedule and shall be used as the baseline for updates.
- 1.5.2 At each regular progress meeting, review and discuss current construction progress and submittals schedules with Consultant and Owner, including activities that are behind schedule and planned measures to regain schedule slippage in key areas on or near the critical path.
- 1.5.3 Activities considered behind schedule are those with start or completion dates later than the dates shown on the baseline schedule.

## **1.6 RECORDING ACTUAL SITE CONDITIONS ON AS-BUILT DRAWINGS**

- 1.6.1 For the purposes of this Section, the following definitions as defined by the Ontario Association of Architects Practice Tip – PT.14 Version 1.1 apply:
  - 1.6.1.1 As-built Drawings: Drawings usually prepared by Contractor as it constructs the Project and upon which it documents the actual locations of building components and changes to the original Contract Documents. These, or a copy of same, are typically turned over to the Consultant or Owner at completion of the Project.
- 1.6.2 Clearly label each drawing as “AS-BUILT DRAWING”. Record information concurrently with construction progress. Do not conceal Work until required information is recorded.
- 1.6.3 Accurately and neatly record deviations from Contract Documents, including addenda, Supplementary Instructions and Change Orders, caused by site conditions.
- 1.6.4 Annotate with coloured felt tip marking pens, maintaining separate colours for each major system, for recording changed information. Digital annotation of as-built data is permitted.
- 1.6.5 Clearly and legibly mark each item to record the actual construction, including but not limited to:
  - 1.6.5.1 Measured depths of foundation elements in relation to finished first floor datum.
  - 1.6.5.2 Measured horizontal and vertical locations of underground utilities and related components, referenced to permanent surface improvements.

- 1.6.5.3 Measured locations of pipes, ducts, conduits, outlets, fixtures, access panels, and related components, referenced to visible and accessible features of the construction.
- 1.6.5.4 Measured locations of interior utilities and related components, referenced to visible and accessible features of the construction.
- 1.6.5.5 Field changes of dimensions and details.
- 1.6.5.6 Changes made by Change Orders and Supplemental Instructions.
- 1.6.5.7 References to Shop Drawings, where Shop Drawings show more detail.
- 1.6.5.8 Field changes of dimension and detail.
- 1.6.5.9 Details not shown on original Contract Drawings.
- 1.6.5.10 Life Safety elements including, but not limited to:
  - .1 Smoke compartmentalization.
  - .2 Exit signage.
  - .3 Fire extinguishers.
  - .4 Fire alarm devices.
  - .5 Pull stations.
  - .6 Sprinkled areas.
- 1.6.5.11 Refer to Divisions 21, 22, 23 and Division 26 for supplementary requirements.
- 1.6.6 Maintain manufacturer's certifications, inspection certifications, field test records, required by individual Specifications sections.
- 1.6.7 Store As-Built Drawings and other documentation separately from construction documents in a secure area. Provide appropriate filing cabinets, shelving, or racks for storage. Digital filing of as-built data is also permitted.
- 1.6.8 Label As-Built Drawings and other documentation with section numbers that correspond to Table of Contents of Project Manual. Clearly label each document "AS-BUILT" in legible font.
- 1.6.9 Maintain the As-Built Drawings and other documentation in legible and clean condition, free from damage or deterioration. As-built Drawings and other documentation must not be used for construction purposes.
- 1.6.10 Keep As-Built Drawings and other documentation readily available for inspection by Consultant.
- 1.6.11 Refer to Section 01 78 00 for additional requirements.

## 1.7 PHOTOGRAPHIC DOCUMENTATION

- 1.7.1 Preconstruction Photographs: Before commencement of the Work, take photographs of the Place of the Work and surrounding areas, including existing items to remain during construction, from different vantage points, as directed by Consultant. Submit video recording to supplement photographs to show existing conditions prior to start of The Work.



- 1.7.2 Concealed Work Photographs: Take photographs of concealed Work, such as underground utilities, underslab services, piping, conduits, waterproofing, air barriers or vapour retarders, prior to installing or enclosing such Work.
- 1.7.3 Periodic Construction Photographs: Arrange for periodic digital photography to document and provide a photographic record of the progress of the Work. Take digital progress photographs weekly from date of commencement of The Work until date of Ready-for-Takeover, sufficient to record the state of The Work.
- 1.7.4 Identify each photograph by Project name and date taken. Maintain a key plan with each set to identify photographic locations.
- 1.7.5 Submission: Submit .jpg format files in standard resolution via e-mail monthly with application for payment.
  - 1.7.5.1 Submit photographs as originally recorded, without alteration, manipulation, editing, or modification.
  - 1.7.5.2 Metadata: Ensure photographs accurately provide date, time, and location data for each picture.
- 1.7.6 Do not use progress or any other Project photographs for promotional purposes without Owner's written consent.

END OF SECTION

## 1.1 SUMMARY

- 1.1.1 Purpose of Section: Section specifies administrative procedures for preparation and submission of Shop Drawings, Product Data and other documentation related to the Work.
- 1.1.2 Read in conjunction with: CCDC 2-2020, Part 3, Execution of the Work.

## 1.2 DEFINITIONS

- 1.2.1 Submittals: This refers to documents or items required by the Contract Documents to be provided by the Contractor, such as:
  - 1.2.1.1 Shop Drawings, samples, models, mock-ups to indicate details or characteristics, before the portion of the Work that they represent can be incorporated into the Work; and
  - 1.2.1.2 As-built Drawings and manuals to provide instructions to the operation and maintenance of the Work.

## 1.3 ADMINISTRATIVE REQUIREMENTS

- 1.3.1 Provide submittals in the language of the Contract.
- 1.3.2 Submit specified submittals to Consultant for review. Submit with reasonable promptness and in orderly sequence so as to not cause delay in the Work. Failure to submit in ample time is not considered sufficient reason for an extension of Contract Time or for Product substitutions or other deviations from the Drawings and Specifications.
- 1.3.3 Where required by authorities having jurisdiction, provide submittals to such authorities for review and approval.
- 1.3.4 Do not proceed with Work affected by a submittal until review is complete.
- 1.3.5 Present Shop Drawings, Product data, and samples in SI metric units unless indicated otherwise.
- 1.3.6 Review submittals, provide verified field measurements where applicable, and affix Contractor's review stamp prior to submission to Consultant. Contractor's review stamp represents that necessary requirements have been determined and verified, and that the submittal has been checked and coordinated with requirements of the Work and Contract Documents.
- 1.3.7 Verify field measurements and that affected adjacent Work is coordinated.
- 1.3.8 Submittals not meeting specified requirements will be returned with comments.
- 1.3.9 Do not propose Substitutions or deviations from Contract Documents via Shop Drawing, Product data and sample submittals. Consultant will return such submissions without review. Refer to Section 01 25 00 for Substitution Procedures.

## 1.4 SUBMITTAL PROCEDURES, GENERALLY

- 1.4.1 Schedule of Submittals: Refer to 01 32 00 - Construction Progress Documentation.
- 1.4.2 Administrative Requirements:

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- 1.4.2.1 Assemble submittals and transmit to Consultant by sending via email. Include PDF transmittal form. Include information in email subject line clearly identifying Project name, Project no, and submittal scope.
  - 1.4.2.2 Processing Time: Allow time for submittal review, including time for resubmittals, as follows.
    - .1 Time for review shall commence on Consultant's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
    - .2 Initial Review: Allow 10 Working Days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Consultant will advise Contractor when a submittal being processed must be delayed for coordination.
    - .3 Resubmittal Review: Allow 10 Working Days for review of each resubmittal.
  - 1.4.2.3 Deviations and Additional Information:
    - .1 On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information and revisions, other than those requested by Consultant on previous submittals.
    - .2 Indicate by highlighting on each submittal or noting on attached separate sheet.
    - .3 Delete information not applicable to Project.
    - .4 Supplement standard information to provide details applicable to Project.
    - .5 Identify options requiring selection by Consultant.
  - 1.4.3 Submittals Format: Submit electronic copies of each submittal unless otherwise indicated. Include the following information in each submittal:
    - 1.4.3.1 Date and revision dates.
    - 1.4.3.2 Project title and number.
    - 1.4.3.3 Location(s) where Product is to be installed, as appropriate.
    - 1.4.3.4 Other necessary identification.
    - 1.4.3.5 Remarks.
    - 1.4.3.6 Transmittal letter, containing:
      - .1 Date.
      - .2 Project title and number.
      - .3 Contractor's name and address.
      - .4 Unique submittal number, including revision identifier. Include Specification Section number with sequential alphanumeric identifier and alphanumeric suffix for resubmittals.
      - .5 Submittal purpose and description.
      - .6 Signature of transmitter.

.7 Other pertinent data.

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

## 1.5 CONTRACTOR'S REVIEW PROCESS AND RESPONSIBILITY

- 1.5.1 Submit to Consultant and to authorities having jurisdiction (as required), documents listed to be submitted for review. Submit promptly and in orderly sequence to not cause delay in Work.
- 1.5.2 Do not submit materials that are not identified in Contract Documents, such submissions will be returned without review.
- 1.5.3 Failure to submit documentation in ample time is not considered sufficient reason for increases to Contract Price or Contract Time. No claims for extension by reason of such default will be allowed.
- 1.5.4 Final approval of authorities having jurisdiction, where required, shall be obtained prior to submitting Shop Drawings or other documentation to Consultant.
- 1.5.5 Do not proceed with, or fabricate Work affected by specific submittals until review is complete.
- 1.5.6 Present Shop Drawings, Product Data, samples and mock-ups in SI Metric or Imperial units to match measurement system indicated on Drawings.
- 1.5.7 Review submittals prior to submission to Consultant. This review shall represent that necessary requirements have been determined and verified, and that each submittal has been checked and coordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, and dated by the Contractor, and identified as to specific Project will be returned without being examined and considered rejected.
- 1.5.8 Notify Consultant, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- 1.5.9 Verify field measurements and affected adjacent Work are coordinated. Confirm and coordinate requirements pertaining to fabrication processes, quantities, construction techniques, installation and similar information.
- 1.5.10 Contractor's responsibility for errors and omissions in submission is not relieved by Consultant's review of submittals.
- 1.5.11 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Consultant's review.
- 1.5.12 Record each review as well as inspection and testing reports in manner suitable for inclusion in closeout documentation and submission at completion of Project.
- 1.5.13 Keep one reviewed copy of each submission on site.

## 1.6 CONSULTANT'S REVIEW AND RESPONSIBILITIES

- 1.6.1 Consultant's General Review:
  - 1.6.1.1 Consultant will perform general review of The Work for general conformance with Contract Documents. Review includes review of

- Shop Drawings, review of field Work and review of reports produced by various inspection and testing agencies.
- 1.6.1.2 Review of Contractors' submittals by Consultant is for sole purpose of ascertaining conformance with general concept.
  - 1.6.1.3 This review shall not mean that Consultant approves detail design inherent in submittals, responsibility for which shall remain with Contractor, and such review shall not relieve Contractor of responsibility for errors or omissions or of responsibility for meeting requirements of Contract Documents.
  - 1.6.1.4 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.
- 1.6.2 Submittal Review and Actions: Consultant will review each submittal, indicate corrections or revisions required, and return annotated files to Contractor. Consultant will indicate, via markup on each submittal, the appropriate action, as follows:
- 1.6.2.1 "REVIEWED FOR GENERAL DESIGN" OR "REVIEWED AS NOTED": Upon review by Consultant, no apparent errors or omissions are discovered by Consultant, or only minor corrections are to be made. Copies will be returned to Contractor and fabrication and installation of Work may proceed.
  - 1.6.2.2 "REVISE AND RESUBMIT": Make changes as Consultant may require, consistent with Contract Documents. When resubmitting, notify Consultant in writing of revisions other than those requested.
  - 1.6.2.3 "REJECTED": Shop Drawings are rejected. Noted copy will be returned and resubmission of corrected submittals, through same procedure indicated above, must be performed before fabrication and installation of Work proceeds.
- 1.6.3 Fabrication Guidelines:
- 1.6.3.1 Do not fabricate any part of the Work until Shop Drawings are reviewed as "REVIEWED FOR GENERAL DESIGN" or "REVIEWED AS NOTED".
  - 1.6.3.2 Do not resubmit Shop Drawings indicated as "REVIEWED FOR GENERAL DESIGN" or "REVIEWED AS NOTED".
  - 1.6.3.3 Resubmit Shop Drawings indicated as "REVISE AND RESUBMIT" with required changes and comments addressed. Insert letter "R" after Shop Drawing number on resubmitted Shop Drawings. Re-date and re-sign resubmitted Shop Drawings. Identify revisions from earlier submissions graphically on revised Shop Drawings;

## 1.7 PRODUCT DATA

- 1.7.1 Mark Product data sheets to show applicable Products and options. Include the following:

- 1.7.1.1 Manufacturer's written recommendations, Product Specifications, and installation instructions.
- 1.7.1.2 Wiring diagrams showing factory-installed wiring.
- 1.7.1.3 Printed performance curves and operational range diagrams.
- 1.7.1.4 Testing by recognized testing agency.
- 1.7.1.5 Compliance with specified standards and requirements.

## 1.8 SHOP DRAWINGS

- 1.8.1 Provide Shop Drawings required by Contract Documents. Insert Contractor's review stamp complete with date and signature of Contractor's reviewer.
- 1.8.2 Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
- 1.8.3 Include the following on Shop Drawings as applicable:
  - 1.8.3.1 Project-specific information, drawn accurately to scale.
  - 1.8.3.2 fabrication methods.
  - 1.8.3.3 layout, showing dimensions, including verified field dimensions, and clearances.
  - 1.8.3.4 plans, sections and details;
  - 1.8.3.5 materials thicknesses and finishes;
  - 1.8.3.6 setting, erection and sealing details.
  - 1.8.3.7 methods of securing, fastening and anchoring including field connections.
  - 1.8.3.8 capacities.
  - 1.8.3.9 performance characteristics.
  - 1.8.3.10 standards.
  - 1.8.3.11 operating weight.
  - 1.8.3.12 wiring diagrams.
  - 1.8.3.13 single line and schematic diagrams.
  - 1.8.3.14 relationship to adjacent Work.
  - 1.8.3.15 engineer's stamp (as applicable)

## 1.9 DELEGATED-DESIGN (PROFESSIONAL ENGINEER'S SHOP DRAWINGS)

- 1.9.1 It must be understood that Drawings and details provided in Contract Documents are diagrammatic, and are intended to show design concept, aesthetics, interfacing requirements, configuration, and arrangement; they are not intended to identify or completely resolve problems of thermal and structural movements, assembly framing, engineering design, fixings and anchorages.
- 1.9.2 Where Specifications delegate design of a specific element or system to Contractor, Contractor must engage a registered professional engineer to fully design system including, sizing of additional supports, anchorages, and bracing as required for safe and secure installation.
  - 1.9.2.1 Professional Engineer's Specific Responsibilities:

- .1 If required, submit "Confirmation of Commitment" forms to local authorities.
- .2 Design components requiring structural or other engineering performance.
- .3 Determine specific requirements for assemblies, connections, sizes, and joint spacing.
- .4 Produce, review, stamp, and sign Shop Drawings.
- .5 In addition to Shop Drawings, submit statement for each Product and system assigned to Contractor. Clearly state that products and systems comply with performance and design criteria outlined in Contract Documents. Provide list of calculations upon request.
- .6 Inspect components during fabrication and erection.
- .7 Perform field review and submit field reports within three days of site visits.

## 1.10 SAMPLES

- 1.10.1 Submit samples for Consultant's review in triplicate where specified in the technical Specifications. Label samples as to origin, Project name, and intended use.
- 1.10.2 Submit Samples for review of kind, colour, pattern, and texture and for a comparison of these characteristics between submittal and actual component as delivered and installed. Include name of manufacturer and Product name on label.
- 1.10.3 For each sample, exhibit materials and finishes, such as colour (including maximum colour range within each specified colour), sheen, tone, texture, range of blemishes and other markings. Where colour, pattern or texture is criterion, submit full range of samples.
- 1.10.4 Adjustments made on samples by Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Consultant prior to proceeding with Work.
- 1.10.5 Contractor may be asked to remove and discard Products for which samples have not been reviewed and accepted by Consultant.
- 1.10.6 Consultant selection from samples is not intended to change the Contract Price or Contract Time. If a selection would affect the Contract Price or Contract Time, notify Consultant in writing prior to proceeding with the Work.
- 1.10.7 Resubmit samples as required by Consultant to comply with Contract Documents.
- 1.10.8 Reviewed and accepted samples will establish the standard against which installed Work will be reviewed.
- 1.10.9 Colours:
  - 1.10.9.1 Where a required colour, pattern or texture has not been specified, submit full range of available Products meeting other specified requirements.

- 1.10.9.2 Obtain direction on colours and gloss values in advance of need. If requested, submit samples for colour and gloss selection.
- 1.10.9.3 Follow colour schedule provided by Consultant and use colours and glosses designated.

## 1.11 MISCELLANEOUS SUBMITTALS

- 1.11.1 When required by Contract Documents, submit informational and miscellaneous submittals required by Contract Documents (e.g. plans, reports, certifications, results, records, and similar submittals) for Consultant's review.
- 1.11.2 Test Reports:
  - 1.11.2.1 Submit test reports in accordance with requirements of specification Sections and as requested by Consultant.
  - 1.11.2.2 Reports must be signed by authorized official of testing laboratory and indicate that material, Product or system is identical to material, Product or system to be provided for Project, and has been tested in accordance with specified requirements.
  - 1.11.2.3 Testing must have been within three years of date of Contract award.
- 1.11.3 Certificates:
  - 1.11.3.1 Submit certificates in accordance with requirements of specification Sections and as requested by Consultant.
  - 1.11.3.2 Statements must be printed on manufacturer's letterhead and signed by responsible officials of manufacturer of Product, system or material, and attesting that Product, system or material meets specification requirements.
  - 1.11.3.3 Certificates must be Project-specific, clearly indicated Project name, and dated after date of Contract award.

## 1.12 COORDINATION/INTERFERENCE DRAWINGS

- 1.12.1 For all locations, before commencing installation, prepare coordination/interference Drawings showing relationship of items, including, but not limited to, structure, electrical, cable trays, communication system, ductwork, conduits, piping, sprinklers, ceiling supports and framing, communication and specialized equipment located within ceiling and shaft spaces.
- 1.12.2 Contractor shall lead process of interference Drawings in coordination with mechanical, electrical or other Subcontractors as applicable.
- 1.12.3 Prepare Drawings indicating relationship of new and existing and/or unforeseen conditions including new construction or construction which existed prior to commencement of Work in the area. For construction in existing areas, survey existing conditions. Show existing conditions on interference Drawings and coordinate such conditions with new Work. Submit or post coordination/interference drawing files in PDF format in accordance with Shop Drawing requirements specified in this Section.
  - 1.12.3.1 Provide Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination/interference Drawings on standard printed data.



- 1.12.3.2 Use applicable Drawings as a basis for preparation of coordination/interference Drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
- 1.12.4 Consultant Review: Consultant will review coordination/interference Drawings to confirm that, in general, the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility. If Consultant determines that coordination/interference Drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Consultant will so inform Contractor, who shall make suitable modifications and resubmit.
- 1.12.5 Installation shall proceed in accordance with final approved interference Drawings. Work carried out without final approved interference Drawings and which does not meet requirements specified in Contract Documents or specified ceiling heights shall be removed, re-coordinated and re-installed at no additional cost to Owner.
- 1.12.6 Coordination/Interference Drawing Organization: Organize coordination/interference Drawings as follows:
- 1.12.6.1 Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan Drawings with section Drawings where required to adequately represent the Work.
- 1.12.6.2 Plenum Space: Indicate subframing for support of ceiling and wall systems, mechanical and electrical equipment, and related Work. Locate components within plenums to accommodate layout of light fixtures and other components indicated on Drawings. Indicate areas of conflict between light fixtures and other components.
- 1.12.6.3 Mechanical Rooms: Provide coordination/interference Drawings for mechanical rooms, showing plans and elevations of mechanical, plumbing, fire-protection, fire-alarm, and electrical equipment.
- 1.12.6.4 Structural Penetrations: Indicate penetrations and openings required for all disciplines.
- 1.12.6.5 Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
- 1.12.6.6 Mechanical and Plumbing Work: Show the following:
- .1 Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.
  - .2 Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts and electrical distribution equipment.
  - .3 Fire-rated enclosures around ductwork.

1.12.6.7 Access Panels:

- .1 Before commencing mechanical or electrical Work after coordination with respective trades, prepare set of reflected ceiling plans indicating exact locations and sizes of access panels and doors. Prepare Drawings for areas/rooms designated by Consultant.
- .2 Submit Drawings to Consultant for review. Allow Consultant to revise layout or quantity of access doors and panels, by relocating related building services a maximum of 2000 mm (6' - 7"), at no additional cost to Owner.
- .3 Should a relocation exceed 2000 mm (6' - 7"), Contract Price will be adjusted in accordance with provisions for changes in Contract Documents.
- .4 Finish access panels and doors to match adjacent wall and/or ceiling finish unless otherwise specified or indicated.

1.12.6.8 Electrical Work: Show the following:

- .1 Runs of vertical and horizontal conduit 32 mm (1-1/4 inches) in diameter and larger.
- .2 Light fixture, exit light, emergency battery pack, smoke detector, and other fire-alarm locations.
- .3 Panel board, switchboard, switchgear, transformer, busway, generator, and motor-control center locations.
- .4 Location of pull boxes and junction boxes, dimensioned from column center lines.

1.12.6.9 Fire-Protection System: Show the following:

- .1 Locations of standpipes, mains piping, branch lines, pipe drops, and sprinkler heads.

1.12.7 Mechanical and Electrical Location Drawings: Mechanical and electrical Drawings indicate approximate locations diagrammatically. Prior to installation, request and obtain final locations and arrangement Drawings for mechanical and electrical items. Allow Consultant to adjust final locations within a 1500 mm (5') radius from diagrammatic position indicated, without change to Contract Price.

1.12.7.1 In case of conflicts between locations of mechanical and electrical items, such as switches and fixtures, locations indicated on architectural Drawings shall take precedence.

1.12.7.2 Align and cluster devices and fitments neatly in accordance with specified mounting heights, properly aligned horizontally and vertically.

END OF SECTION

## 1.1 SUMMARY

- 1.1.1 This Section specifies requirements for Work that alters existing facility components, systems or equipment. Provide alterations and repairs to The Work indicated on or inferable from Contract Documents.
- 1.1.2 Alterations and repairs work includes, but is not limited to:
  - 1.1.2.1 Alterations and repairs to existing partitions including fire-rated and non fire-rated types made from gypsum board.
  - 1.1.2.2 Alterations and repairs to existing ceilings, including gypsum board and acoustic ceiling tiles.
  - 1.1.2.3 Alterations and repairs to existing doors and frames.
  - 1.1.2.4 Alterations and repairs to existing flooring, including, but not limited to resilient flooring, ceramic and porcelain tile flooring, carpet tile and other flooring types noted on Drawings.
  - 1.1.2.5 Alterations and repairs to building structure as noted on Structural Drawings and Specifications.
- 1.1.3 Not all items listed in this Section may be applicable to this project. Additional project-specific requirements can be found on Drawings, Schedules and other Specifications. Note that requirements outlined in this Section serve as minimum performance requirement for alterations and repairs work for this Project.

## 1.2 DEFINITIONS

- 1.2.1 Cutting: Removal of in-place construction necessary to permit installation or performance of other Work.
- 1.2.2 Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.
- 1.2.3 Demolish: Completely remove and legally dispose of off-site.
- 1.2.4 Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.
- 1.2.5 Remove and Salvage: Detach items from existing construction and deliver them to Owner ready for reuse.
- 1.2.6 Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.
- 1.2.7 Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner ready for reuse. Include fasteners or brackets needed for reattachment elsewhere.
- 1.2.8 Recycle: Recovery of demolition waste for subsequent processing in preparation for reuse.
- 1.2.9 Existing to Remain: Existing functional items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

### 1.3 PLANNING, SCHEDULING AND COORDINATION OF ALTERATIONS

- 1.3.1 Plan and schedule alterations to accommodate anticipated difficulties, indicated on and inferable from the Contract Documents. Co-ordinate alterations with other Contractors and proceed with work expeditiously.
- 1.3.2 Coordinate work between different Sections and trades, taking into account existing installations to ensure the best arrangement of pipes, conduits, ducts, and mechanical, electrical, and other equipment and items in available space. Under no circumstances will any extra payment be allowed due to failure by Contractor to take into consideration existing installations and to coordinate work.
- 1.3.3 Coordinate alterations to minimize disruption to the Owner's ongoing operations. Minimize noise and interference with the use of existing premises and services, and ensure maximum safety for occupants during work.
- 1.3.4 Schedule alterations required in Owner-occupied spaces or adjacent areas on a room-by-room basis, in accordance with a schedule mutually agreed upon with the Owner. Make requests for access to occupied areas in accordance with minimum notice periods specified in Section 01 11 00 - Summary of Work.
- 1.3.5 Provide the Owner with appropriate notice in advance of unscheduled disturbance to use of existing premises and services. Perform work at times directed by the Owner. Make requests for shutdowns in accordance with minimum notice periods specified in Section 01 11 00 - Summary of Work.
- 1.3.6 Cutting, patching and making good existing work to accommodate new work and requirements specified under other Sections shall be done in conjunction with work specified herein.

### 1.4 SUBMITTALS

- 1.4.1 Submit schedule for proposed shut-downs prior to start of Work. Notify Owner, in writing, of any planned utility outages in accordance with Owner's policies.
- 1.4.2 Submit schedule of noise-producing operations to Owner and wait for approval before proceeding.
- 1.4.3 Request for alterations, repairs, cutting, patching and remedial work:
  - 1.4.3.1 Submit written request before executing cutting, coring, or alteration work that may impact the structural integrity of any element of the Work; integrity of exterior elements; efficiency, maintenance, or safety of operational elements; visual qualities of exposed elements; work by Owner or other contractors; or warranty of installed Products.
  - 1.4.3.2 Request must be submitted in advance and include following:
    - .1 Identification of the Project.
    - .2 Location and description of the affected work, including drawings or sketches as necessary.
    - .3 Statement on necessity for cutting or alteration.
    - .4 Description of proposed work and the Products to be used.
    - .5 Alternatives to cutting and patching.
    - .6 Effect on the work of the Owner or other contractors.

- .7 Written permission from any affected other contractors.
      - .8 Date and time work will be executed.
    - 1.4.3.3 Obtain proper approval and written permission from Owner, Consultant all parties affected before executing cutting, patching or alterations work.
  - 1.4.4 Request for alterations, repairs, cutting, patching and remedial work: Submit written request in advance of cutting, coring, or alteration which affects or is likely to affect:
    - 1.4.4.1 Structural integrity of any element of the Work.
    - 1.4.4.2 Integrity of weather-exposed or moisture-resistant elements.
    - 1.4.4.3 Efficiency, maintenance, or safety of any operational element.
    - 1.4.4.4 Visual qualities of sight-exposed elements.
    - 1.4.4.5 Work of Owner or other contractors.
    - 1.4.4.6 Warranty of Products affected.
    - 1.4.4.7 Include the following in request:
      - .1 Identification of Project.
      - .2 Location and description of affected work, including drawings or sketches as required.
      - .3 Statement on necessity for cutting or alteration.
      - .4 Description of proposed work, and Products to be used.
      - .5 Alternatives to cutting and patching.
      - .6 Effect on work of Owner or other contractors.
      - .7 Written permission of affected other contractors.
      - .8 Date and time work will be executed.

## 1.5 QUALITY ASSURANCE

- 1.5.1 Ensure that work performed under this Section is carried out by qualified and competent installers with a minimum of five years of experience and specific skills required for the Work being performed. Provide evidence of past projects of similar size and scope, and maintain a continuing quality assurance program for both materials and installation crews.
- 1.5.2 Licensed Professionals: Engage services of a Professional Engineer licensed to practice in Province of Ontario, as specified in Section 01 40 00 - Quality Requirements, to provide design services, including comprehensive engineering analysis, and supervise all work requiring structural performance or professional design.

## 1.6 PERFORMANCE

- 1.6.1 Execute necessary work to complete alterations and repair work, even if not specifically shown on Drawings, Schedules, and Specifications.
- 1.6.2 Ensure that remodeling, alteration, demolition, cutting, patching, removal, refinishing, relocation, and disposal work comply with Federal, Provincial, and

local health and safety standards, codes, ordinances, and Owner's Institutional Policies. In case of conflicts, comply with the more stringent requirements.

- 1.6.3 Preserve aesthetic and structural integrity of materials and construction during remodeling, alteration, demolition, cutting, patching, removal, and refinishing work.
- 1.6.4 Notify Owner and Consultant in writing and obtain clear direction prior to installation of Work if existing penetrations cannot be sealed due to accessibility, constructability or any other condition.
- 1.6.5 Before performing work with noise-producing equipment, obtain approval from the Owner for entire procedure.

## 1.7 MATERIALS

- 1.7.1 Unless otherwise specified, when replacing existing or previously installed Products in the course of work, use replacement Products that match existing contiguous materials and finishes in all respects. Repairs and/or continuations of existing work must be relatively imperceptible in finished work when viewed under finished lighting conditions from a distance of 1.8 meters (6 ft).
- 1.7.2 Provide Products, materials, construction, workmanship, and finish matching in-place elements unless otherwise indicated. Where new materials must be supplied, use materials meeting minimum performance specified in technical Specifications (Div 02 to 49).
- 1.7.3 Ensure new materials used to repair damage are compatible with existing work. Verify compatibility and suitability of substrates, finishes, and primers before patching.
- 1.7.4 When materials are not specified in the Specifications, augment materials at Contractor's option, within applicable building code limitations, while maintaining integrity of design and architectural criteria.
- 1.7.5 Unless otherwise indicated or specified, finish materials and appearance of new work must match existing contiguous materials and finishes in all respects. Repairs and/or continuations of existing work must be relatively imperceptible in finished work when viewed under finished lighting conditions from a distance of 1.8 meters (6 ft).
- 1.7.6 Defective Products will be rejected regardless of previous reviews. Remove and replace defective or damaged Products at own expense and be responsible for delays and expenses caused by rejection.

## 1.8 EXAMINATION

- 1.8.1 Before commencing work, carefully study and coordinate relevant Drawings, including Shop Drawings and manufacturers' literature, to obtain accurate information about locations, arrangements, and sizes of fixtures, equipment, ducts, piping, conduits, outlets, and similar items. Note that the Drawings are in part diagrammatic and intended to convey the general and approximate scope of alteration and repair work. Become familiar with conditions and spaces that may affect alterations and repairs work to ensure accurate execution of the work.

- 1.8.2 Obtain approval of Consultant and healthcare facility infection control team before proceeding with demolition and/or alterations to any portion of existing building.

## **1.9 EXISTING ACTIVITIES, FACILITIES AND CONDITIONS**

- 1.9.1 Arrange and pay for all costs for temporarily relocating, securing, or accommodating existing services that may affect the work. Notify Consultant immediately should any piping, sewers, cables, or similar services are encountered during the work that are not known from Owner's and utilities companies. Do not proceed with any removal or cutting until directed.
- 1.9.2 Protect and maintain existing services and systems in operation. Ensure all lines affected are safe, secure, and properly sealed when removing or altering existing services.
- 1.9.3 Prior to starting work in existing areas, provide a report listing any defects and deficiencies, with accompanying photographs if necessary, for work that will remain in the area or may be vulnerable to damage due to proximity to alteration work. Rectify any defects or deficiencies not recorded in report at own expense. Contractor and Consultant will initial report before work commences.
- 1.9.4 Provide necessary temporary connections and supports, and provide necessary protections to ensure uninterrupted operation of all services and systems scheduled to remain in operation during the course of the work.
- 1.9.5 Where new connections are made to existing services, make connections as directed and locate connections so that services are not damaged or disturbed by construction activities. Make arrangements and pay all costs for necessary changes or additions to existing services, including insulation and sealing of exposed pipes and ducts.
- 1.9.6 Do not interfere with operation of existing services unless directed or approved in writing by Owner. Perform cutting, capping, re-routing and other related work on existing services in a manner that will not damage or interfere with operation of other services.
- 1.9.7 Verify existing services conditions and connections as required to ensure Work can be properly executed. Notify Owner and Consultant of any discrepancies or unsatisfactory conditions.
- 1.9.8 When working near or above existing services, provide suitable bridging or protective support. Protect the services with suitable barriers, coverings or shielding to prevent damage.
- 1.9.9 Where Work involves cutting, disconnecting or interrupting services, provide Owner and Consultant with advance notice and secure their approval prior to proceeding. Ensure that all affected services are reinstated, fully operational and tested to the satisfaction of Owner and Consultant.

## **1.10 PREPARATION**

- 1.10.1 Design and install shoring, bracing, and supports to maintain structural integrity of The Work.

- 1.10.2 Ensure adequate protection is provided for items adjacent to The Work and obtain Consultant's acceptance for protection provided.
- 1.10.3 Provide protection from weather throughout the entire construction period.
- 1.10.4 Ensure proper and safe means of fire exit from all zones of existing building are provided at all times, to approval of Authorities Having Jurisdiction.
- 1.10.5 Erect weather tight and dustproof screens to provide isolation and protection from adjoining areas and rooms.

## 1.11 INSTALLATION

- 1.11.1 Follow manufacturer's instructions and specifications for handling, storage, preparation, site conditions, ancillary Products or accessories, methods of installation, protection and cleaning. Submit copies of instructions and obtain direction from Consultant if there are discrepancies between manufacturer's instructions and Specifications.
- 1.11.2 Submit copies of manufacturer's directions or instructions for review before commencing work. Have manufacturers, suppliers, or accredited agents inspect work that incorporates their Products when required by Specifications or manufacturer's recommendations.
- 1.11.3 Perform work according to industry practice and use skilled and competent workers.
- 1.11.4 Keep work neat, plumb, square, and straight. Ensure work is properly aligned, free of irregularities, and with close joints.
- 1.11.5 Prevent materials from coming into contact with each other if such contact will result in corrosion, stain, discoloration, or deterioration. Provide separators where contact is unavoidable.
- 1.11.6 Conceal pipes, ducts, conduits, tubing, wiring, and other items requiring concealment in floor, wall, and ceiling construction of finished areas unless indicated or specified otherwise. Seek clarification from Consultant before proceeding with work in question if in doubt.
- 1.11.7 Install fixtures, equipment, ducts, piping, and conduit to conserve space and avoid interference and obstruction of access. Follow manufacturer's recommendations and make changes requested at no additional cost to Owner.
- 1.11.8 Relocate equipment, services, doors, openings, furring, and other work at no additional cost to Owner within reasonable minor adjustments, that is within  $\pm$  1500 mm (5' - 0") horizontally or vertically.
- 1.11.9 Lay out mechanical and electrical work before concrete placement and furring installation to allow for proper concealment.
- 1.11.10 Test and inspect work before applying pipe covering and before Work is concealed.
- 1.11.11 Minimize dust migration and protect sensitive items from dust. Keep demolition areas wetted where practical.
- 1.11.12 Remove, store, and reinstall existing fixed equipment, fixtures, and components that interfere with construction work.



- 1.11.13 Do not undermine, damage or endanger existing structure, pipe lines, electrical conduit, and wiring. Immediately repair and Make Good existing work affected by any damage at no additional cost to Owner.

## 1.12 REMOVAL OF EXISTING CONSTRUCTION

- 1.12.1 Perform demolition and removal work in accordance with CSA S350 and requirements of Section 02 41 19.
- 1.12.2 Remove selected building components from locations indicated on Drawings and/or as directed by Owner. Remove carefully items designated to be re-used or to be handed over to Owner. Storage location may be in same building or at location away from the Place of The Work.
- 1.12.3 Do not stack or pile materials and/or debris in building to extent that it will create obstruction or hazards to building and occupants thereof.
- 1.12.4 Remove demolition material in covered container or double bags when construction area is in vicinity of patient care areas and at time of day when there is minimal corridor traffic.
- 1.12.5 Do not locate demolition storage bin adjacent to air intake HVAC units;
- 1.12.6 At the end of each work session, leave selective demolition work in safe conditions.
- 1.12.7 Existing Flooring:
- 1.12.7.1 Vacuum existing flooring thoroughly, prior to removal, using vacuum equipped with power head/sweeper.
  - 1.12.7.2 Apply fine mist water spray to flooring as required to minimize dust generation during removal. Avoid spraying near electrical outlets.
  - 1.12.7.3 Remove existing flooring from areas indicated and legally dispose materials off site.
  - 1.12.7.4 Vacuum substrate immediately after existing flooring has been removed.
  - 1.12.7.5 Remove existing flooring accessories and wall base from areas to receive new flooring materials.
  - 1.12.7.6 Remove loose and poorly adhered adhesive remaining on substrate. Remove trowel tracks and rough remaining adhesive using mechanical means.
- 1.12.8 Services:
- 1.12.8.1 Where permanently disconnecting domestic water, medical vacuum, medical gas, natural gas, treated water, drainage, vent, or other piping serving removed fixtures, inlets, outlets or equipment, remove all associated piping back to remaining active mains.
  - 1.12.8.2 Cut off, cap, divert or remove existing services in areas being altered which are affected by changes as required or as directed by municipal authorities and utility company concerned and Consultant. Protect and maintain active services to existing building.
  - 1.12.8.3 Protect active services which are intended to remain and which pass through spaces involved in alterations and repairs.

1.12.8.4 Refer to Drawings for removal, capping, and alterations to conduit, wiring, fixtures, ducts, piping and other service lines.

1.12.9 Floor Drains:

1.12.9.1 Isolate and seal off existing floor drains that will not be in use after completion of Project from the building's active drainage and vent system. Ensure that floor drain bodies remaining in slabs are sealed off completely. Remove associated piping serving decommissioned floor drains that are located in suspended slabs back to active mains that will remain in use.

**1.13 CUTTING AND PATCHING, GENERALLY**

1.13.1 Perform work in compliance with applicable technical Specification Sections and requirements outlined in this Section.

1.13.2 Repair holes and damaged areas that are visible in ceilings, walls, and floors of finished spaces. Ensure that repaired construction matches adjacent existing construction and finish, unless otherwise indicated or specified.

1.13.3 Minor surface abrasions, small nail holes, cracks, aged checked natural wood finish, and other similar deterioration that are not visible under finished lighting conditions from a distance of 150 mm (6 in), do not need to be repaired if base material is sound and suitable for scheduled finishes, if any.

1.13.4 Coordinate cutting, patching, and openings with Subcontractors to avoid unnecessary and unscheduled work. Join new work to existing in a neat and accurate manner, and provide sound attenuation fillers at interior junctions with other building components.

1.13.5 Join new work to existing and install new supporting members, anchors, and other items necessary for completion of work. Provide temporary bracing where required.

1.13.6 Cut and patch The Work with care and precision, ensuring that patches match adjacent construction and finishes, unless indicated otherwise. Make junctions between new work and existing work, and matching material, form, construction, and finish, unless otherwise specified. Make junctions neat and discreet.

1.13.7 Ensure patching fits tightly around construction pipes, ducts, and conduits that pass through work and ensure air tightness.

1.13.8 Do not cut and patch operating elements and related components in a manner that reduces their capacity to perform for their intended purpose or that results in increased maintenance or decreased operational and life safety. Operating elements include without limitation, primary operational systems and equipment, air and smoke barriers, fire suppressions systems, mechanical systems including piping and ducts, control, communication, conveying and electrical wiring and special operating systems.

1.13.9 Do not cut and patch miscellaneous elements or related components that could change their loading capacity or result in increased maintenance or decreased operational and life safety. Miscellaneous elements include without limitation, water, moisture, air/vapour barriers, membranes and flashings, exterior curtain

wall system, equipment supports, piping, ductwork, vessels and equipment, noise and vibration control elements and systems.

- 1.13.10 Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Replace construction that has been cut and patched in a visually unsatisfactory manner.
- 1.13.11 Make cuts clean and true with smooth edges, and fit units to tolerances established by existing work.
- 1.13.12 Fill unused and unfilled sleeves and holes, and fill unused sleeves in a manner that restores or maintains their original fire or acoustical STC rating.
- 1.13.13 If sprayed fire resisting, sound absorbing, or insulation applications are encountered that are not identified in Contract Documents or Available Information, inform Consultant for examination and instructions. Restore damaged non-asbestos type fireproofing to original condition before covering with finishes.
- 1.13.14 Repair adjacent construction and surfaces that are damaged or disturbed as a result of alterations.
- 1.13.15 Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform for purpose intended or that results in increased maintenance or decreased operational and life safety.
- 1.13.16 All new and existing penetrations through floor slabs within the Project boundary shall be sealed watertight.
- 1.13.17 Grout and seal penetration holes through exterior walls above grade as required to achieve a weather-tight seal.
- 1.13.18 Ensure penetration holes through exterior walls below grade are grouted and sealed to produce a watertight seal.
- 1.13.19 Where partitions are removed and there is no finished flooring present at base of previous partitions, provide new flooring to match existing flooring in the location where partition previously existed.

#### **1.14 ALTERATION TO FIRE SEPARATIONS**

- 1.14.1 All new and existing penetrations through rated partitions and floor slabs within the Project boundary shall be sealed to provide a fire/smoke rating equal to or greater than the rating of the partitions or floor slab.
- 1.14.2 Ensure pipes, sleeves, ducts, conduit, and other penetrations through surfaces are properly sealed with fire and smoke penetration sealants.
- 1.14.3 Maintain fire separations and provide fire and smoke penetration sealants in areas that are cut and patched. Firestopping must conform to CAN/ULC S115.

#### **1.15 CUTTING AND PATCHING FOR MECHANICAL, ELECTRICAL AND OTHER MISCELLANEOUS ALTERATIONS**

- 1.15.1 Remove existing ceilings and walls, as necessary, for access to valves, piping, conduit, and tubing. Replace with new ceilings and walls as required.
- 1.15.2 Conceal capped services unless otherwise specified.

1.15.3 Mechanical and electrical alterations and repair work may be outside of areas anticipated for architectural work. Include for cutting, patching, repair and alterations beyond site limits or project boundaries in Contract Price.

#### **1.16 STRUCTURAL ELEMENTS (CUTTING AND CORE DRILLING)**

- 1.16.1 Except where structural requirements are indicated on Drawings, do not cut, drill or sleeve load bearing members without first obtaining Consultant's written authorization for each condition. Perform drilling of existing work carefully, leaving a clean hole no larger than required.
- 1.16.2 If not specifically shown, but removal or alteration is required, perform such removal or alteration only upon written approval of the Consultant. Do not damage or alter any structural element of existing building. Core drill circular holes in concrete. Accurately cut new openings for electrical outlets and other recessed items in walls.
- 1.16.3 Cut and core drill existing concrete and masonry walls and slabs as necessary to accommodate alterations for passing services through existing assemblies.
- 1.16.4 Do not damage or alter any structural element of the existing building without obtaining Consultant approval.
- 1.16.5 Core drill circular holes in concrete and accurately cut new openings for recessed items in walls.
- 1.16.6 If core drilling or anchoring to reinforced concrete construction is required, conform to following procedures:
- 1.16.6.1 Retain an independent testing company to locate existing reinforcement and conduit in the areas of proposed openings and to mark locations of the surfaces of slabs and walls on which the cores and cuts are to be started.
  - 1.16.6.2 Existing reinforcing bars in concrete structure may conflict with specific anchor locations or core drilling requirements. Review existing Drawings where available and undertake to locate position of reinforcing bars at locations of core drilling. Obtain approval in writing from Consultant regarding method of verification and examination of substrate.
  - 1.16.6.3 Avoid cutting through critical reinforcement and costly reinforcement bar contacts, electrical, ITS and conduits.
- 1.16.7 Prior to cutting, sawing, breaking, or core drilling through structural and load-bearing members, provide non-destructive testing methods such as Ground Penetrating Radar system (GPR), X-ray examination, or Portable Steel Reinforcement Detection System s to detect conduits, cables, pipes, locations of live power or energy transmitted from power source such as feeds for electric motors, compressors, heating and cooling systems, and similar items in floor slabs and walls as applicable. Identify tendon locations and the potential for tendon tension release before starting work. Confirm final examination method with Consultant prior to commencing the work.
- 1.16.8 Include cost of conducting the non-destructing testing (GPR, X-ray or similar), examination after normal working hours in Contract Price.

- 1.16.9 Include cost of conducting core drilling operations after normal working hours in Contract Price.
- 1.16.10 Thoroughly examine areas and confirm the following: slab thickness, proper concrete cover over reinforcement, identification of rebar pattern, bar diameter and locations, detection of post tension cables, location of metallic and non-metallic pipes and conduits, detection of voids and concrete heterogeneity, and location of pipes and cables under slabs.
- 1.16.11 Conduct a thorough examination over a wider area than that required for coring or cutting, particularly in situations where conflicts with existing systems arise. Repeat scanning process as necessary until a suitable location for cutting and drilling is determined.
- 1.16.12 Ground Penetrating Radar (GPR): Verify that the GPR examination can be performed and ensure that access is available. Comply with requirements published by Concrete Sawing & Drilling Association "CSDA – Best Practice, Ground Penetrating Radar for Concrete Scanning", latest edition.
- 1.16.13 X-Ray Scanning: Only use X-ray technology for scanning concrete with approval from Consultant and Owner, and when GPR is not likely to be successful. Ensure access for scanning is available on both sides of slab (i.e. above and below the slab). Include in Contract Price, cost of conducting X-ray examination and providing radiation shielding barriers.
- 1.16.13.1 Handle and contain materials with special care to prevent radiation exposure to workers and building occupants. Comply with Health and Safety regulations in effect at Place of the Work.
- 1.16.14 Remove toppings before locating reinforcement and conduit, and mark locations and sizes of cores and openings, reinforcement and conduit locations using indelible markers.
- 1.16.15 Submit cut location and layout for review and obtain written acceptance from Consultant. Consultant will review marked-up locations weekly. If Consultant finds locations unacceptable, relocate proposed openings and repeat the process at no additional cost Owner.

## 1.17 CONCRETE, GENERALLY

- 1.17.1 Cutting: Saw cut where exposed to view. Jack hammering with electric or pneumatic equipment is acceptable only with scheduled approval of Owner.
- 1.17.2 Patching: Keep edges of existing concrete damp for 24 hours and scrub with neat Portland cement grout just before placing new concrete. Alternatively, accepted epoxy concrete adhesive may be used. Ensure finish matches the existing adjoining work. Unless otherwise indicated, use 20 MPa (3,000 psi) concrete conforming to CAN/CSA A23.1 for all patching. Install reinforcing bars and dowels if required. If installation of concrete is impractical, fill the openings with dry-packed non-shrink grout. Coordinate with Structural Drawings.

## 1.18 CONCRETE SLABS

- 1.18.1 Level and prepare the existing concrete slabs to receive the proposed new floor finishes. Assume existing substrate is unsuitable to accommodate new Construction.

- 1.18.2 Thoroughly clean slabs removing laitance, oil, grease, and any other foreign matter that could be detrimental to the flooring application.
- 1.18.3 Prepare existing concrete slabs by shot blasting, grinding, or other means acceptable to the finish flooring manufacturer. Ensure that surfaces are clean and free of residue adhesives that do not contain harmful elements, ridges, trowel marks, gouges, or any other matter detrimental to bond of underlayment and flooring. Comply with ASTM F710.
- 1.18.4 Perform conducting moisture emission and pH tests to ensure that the alkali salt residue is within the acceptable limitations of flooring manufacturer. Comply with ASTM F1869 and ASTM F2170.
- 1.18.5 Ensure substrate is scraped to a smooth, level surface and leveled as necessary to accommodate flooring. Use self-leveling underlayment as appropriate for flooring application. Prepare for a flush application of the new flooring material.
- 1.18.6 Crack Repairs: Repair cracks, holes or other deficiencies in accordance with flooring manufacturer's recommendations. For cracks less than 1.5 mm (1/16") employ crack reinforcing tape in accordance with manufacturer's recommendations.
- 1.18.7 Obtain Consultant's acceptance of prepared substrates before installing concrete patching or self-leveling underlayment or flooring.
- 1.18.8 Substrate Remediation:
  - 1.18.8.1 Level all slabs with self-leveling underlayment to ensure that all floor areas are flush with adjacent areas. Prepare substrate to underlayment manufacturer's recommendations.
  - 1.18.8.2 Apply hydraulic cementitious underlayment over entire areas scheduled to receive new flowing. Gypsum based underlayment or "dry pack" mortars are not permitted due to their susceptibility to moisture. Underlayment shall have compressive strength of 27 MPa (4000 psi) after 28 Days.
  - 1.18.8.3 Apply hydraulic cementitious underlayment to manufacturer's instructions. Add aggregate as recommended by manufacturer to extend thickness.
  - 1.18.8.4 Fill new and existing depressions, dished areas, low spots, voids, gaps, cracks, joints, holes, and other substrate defects with skim coat and self-leveling underlayment. Ensure the substrate is flat enough to prevent any object larger than 3mm from passing under a 3-meter straight edge, regardless of the direction of orientation, at any location.
  - 1.18.8.5 Use aluminum retaining angles or other suitable means to contain the leveling coat in required areas

## 1.19 MASONRY

- 1.19.1 Cutting: Cut back masonry to joint lines and remove old mortar allowing space for repairs.
- 1.19.2 Patching: Patch with sound whole units to match existing. Joints shall match adjoining surfaces. Conform to CAN/CSA A371.

## 1.20 CERAMIC TILE

### 1.20.1 Cutting:

- 1.20.1.1 Saw cut to natural joint lines; remove so that repairs or continuations of new work will be relatively imperceptible.
- 1.20.1.2 Remove defective topping and tile work for full depth in complete panels to the nearest divider strip.

1.20.2 Patching and Repairs: Use ceramic tile matching existing. Comply TTMAC Specification Guide 09 30 00 Tile Installation Manual, latest edition.

## 1.21 CARPET

1.21.1 Patch carpet by filling, repairing, refinishing and similar operations in accordance with requirements of CRI Carpet Installation Standard. Patch with durable patching compounds and seams that are as inconspicuous as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.

## 1.22 RESILIENT FLOORING

### 1.22.1 Cutting and Removal:

- 1.22.1.1 Remove existing resilient flooring in accordance with "Recommended Work Practices for Removal of Resilient Floor Coverings", latest edition as published by Resilient Floor Covering Institute.
- 1.22.1.2 Remove existing flooring and bases from indicated areas, unless other Sections specify otherwise. Remove all flooring, adhesive, and setting bed materials down to the concrete substrate.
- 1.22.1.3 Prepare, mix, and apply coatings to neutralize adhesive and setting bed residues and provide a suitable substrate for scheduled flooring in accordance with manufacturer's instructions.
- 1.22.1.4 As resilient flooring may contain asbestos fibers and crystalline silica, avoid sanding, dry sweeping, dry scraping, drilling, sawing, bead blasting, or mechanically chipping or pulverizing existing resilient flooring, backing, lining felt, asphaltic "cutback" adhesive, or other adhesive. Refer to Designated Substances Report appended to Section 00 30 00 for locations of materials suspected to contain hazardous or toxic substances.
- 1.22.1.5 Prepare existing substrates to acceptance of Consultant. Ensure substrate is suitable and compatible with the subsequent applied underlayment or floor finishes. If necessary, provide a moisture reduction barrier.

### 1.22.2 Patching and New Installation:

- 1.22.2.1 Prepare subfloors to receive resilient tile flooring in accordance with ASTM F710 and manufacturer's written recommendations.
- 1.22.2.2 Fill cracks, holes and other defects with cementitious patching compound. Trowel patching compound smooth and level with surrounding surfaces and allow to dry and set. Prohibit traffic until the patching compound cures.

- 1.22.2.3 Where resilient flooring adjoins thicker floor materials, apply underlayment, feathered out to make up difference in level between Products.
- 1.22.2.4 Provide resilient flooring in accordance with the manufacturer's printed installation instructions and using recommended adhesive. Provide Products in each area from the same production run. Accurately scribe flooring materials around walls, columns, floor outlets and other floor penetrations. Pattern shall match existing resilient tile flooring.
- 1.22.2.5 In areas where built-in millwork or fitments are present, lay flooring in full lengths and widths of areas, disregarding the locations of millwork or fitments.
- 1.22.2.6 Terminate flooring at center line of doors in openings where adjacent floor finish or color is dissimilar.
- 1.22.2.7 Install resilient edge strips at unprotected edges of resilient tile flooring. At door openings, install resilient edge strips below the center line of the door.
- 1.22.2.8 Install resilient edge strips according to the manufacturer's printed installation instructions, using the specified adhesive, with a continuous coating of adhesive, tight joints, and proper alignment.
- 1.22.2.9 Install resilient edge strips in longest lengths possible, with neatly mitred corners.
- 1.22.2.10 Terminate flooring at centre line of door in openings where adjacent floor finish or colour is dissimilar.
- 1.22.2.11 Remove and replace loose, damaged, and defective resilient tile flooring where required and as directed by Consultant.
- 1.22.2.12 Protect newly laid resilient tile flooring from construction traffic for a period of two weeks to allow the flooring to bond firmly. At the end of this time, clean flooring with cleaner and apply sealer (if required) and finish in accordance with the manufacturer's instructions.
- 1.22.2.13 Work must be handed over to Owner free of blemishes and in perfect condition.

### 1.23 GYPSUM PARTITIONS

- 1.23.1 If walls or partitions that are removed extend from one finished area into another, patch and repair wall surfaces in new space to provide even surface with uniform finish, color, texture, and appearance. If necessary, remove wall coverings and replace with new materials to achieve uniform color and appearance.
- 1.23.2 Patching:
  - 1.23.2.1 Where mechanical, electrical, and architectural work penetrates existing finishes, patch and repair existing gypsum finishes with new finishes to match existing. Conform to requirements of ASTM C840.
  - 1.23.2.2 Provide proper ventilation to dry finished surfaces during and after installation. In enclosed areas without proper ventilation and air circulation, provide additional temporary, portable mechanical ventilation.



- 1.23.2.3 If patching occurs in a painted surface, apply primer and intermediate paint coats over patch. Apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces to satisfaction of Consultant.

#### **1.24 TEMPORARY CEILING REMOVAL**

- 1.24.1 Minimize exposure of occupied spaces to work areas above finished ceiling during work. Remove only limited ceiling panels as required to complete work in such areas. Endeavour to complete work requiring ceiling access within 2 working days or less. Reinstall or repair removed ceiling panels immediately.
- 1.24.2 Work and coordinate with electrical, IT, security, and mechanical trades to determine full scope of temporary ceiling removal required to allow for feeder runs and other necessary work by those Sections (extent of ceiling removal has not been shown on Drawings).
- 1.24.3 Provide temporary protection, signage, and barriers to protect others during ceiling access operations.
- 1.24.4 Remove tiles, panels, and tee-bar suspension from the area required by other trades.
- 1.24.5 After completion of work by other trades and required inspections, reinstate tee-bar and acoustic tile. If the tile or tee-bar is damaged, bent, discolored, scratched, or appears of lesser quality than the surrounding area, replace with new material.
- 1.24.6 Note that plaster ceilings in existing buildings may have a fire resistance rating and be part of a membrane fire separation. Verify and maintain existing fire rating.
- 1.24.7 Remove and replace gypsum board bulkheads and ceilings in areas as required for access. Reinstall removed construction to match existing finishes and Make Good as necessary.

#### **1.25 ARCHITECTURAL WOOD CASEWORK**

- 1.25.1 Cutting: Cut back to a joint or panel line.
- 1.25.2 Patch as required. Remove and replace millwork with new in accordance with 06 40 00.

#### **1.26 CORNER GUARD AND OTHER WALL PROTECTION**

- 1.26.1 Cutting: Cut back to a joint or panel line.
- 1.26.2 Patch as required. Remove and replace wall protection with new wall protection in accordance with 10 26 13.

#### **1.27 EXISTING DOORS, FRAMES, AND SASH**

- 1.27.1 Cutting and Removal: Remove in such manner as to facilitate filling in of openings or installation of new work, as required by Drawings.
- 1.27.2 Modify existing steel door frames with cutouts, hardware blanking, reinforcing, tapping and drilling arrangements, repairs to accommodate new doors and other preparations;

1.27.3 Grind exposed welds smooth and flush. Fill open joints, seams and depressions with filler or by continuous brazing or welding. Grind smooth to true sharp arises and profiles and sand down to smooth, true, uniform finish. Perform welding to CSA W59-M.

1.27.4 Where existing frame required replacement:

1.27.4.1 Fabricate frames to match existing in every respect; Reinforce frame as required for surface mounted hardware.

1.27.4.2 Where frames occur in masonry Provide strip strap, T-strap or wire type anchors. Where frames occur in gypsum board Provide stud type anchors.

1.27.4.3 Mitre corners of frames. Cut frame mitres accurately and weld continuously on inside of frame .Protect mortise cut outs with mortar guard boxes.

1.27.4.4 Factory apply touch-up primer to areas where zinc coating has been removed during fabrication.

## 1.28 PAINTING AND FINISHING

1.28.1 Prepare the patched areas as necessary for new work. Wash areas to be repainted with neutral soap or detergent, thoroughly rinse, and sand when dry. Feather remaining paint edges smooth with sandpaper. Comply with requirements of the MPI Painting Manual and MPI Maintenance Repainting Manual.

1.28.2 Conform to applicable provisions of Section 09 91 00. Prepare and build up bare areas and patches in existing painted surfaces with proper primer and intermediate coats, sand smooth, and flush with adjoining surfaces. Paint areas scheduled to be painted and/or repainted as specified Specifications.

## 1.29 PROTECTION

1.29.1 During performance of work, adequately protect work completed and in progress, and existing work to remain, such as floors, finishes, trim, and similar components, as completely as possible to minimize replacement of damaged work by each Subcontractor and trade. Work damaged or defaced due to failure to Provide adequate protection shall be repaired, or removed and replaced as directed by Consultant.

1.29.2 Protect active services which are intended to remain and which pass through spaces involved in alterations and repairs.

## 1.30 CLEANING AND RESTORATION

1.30.1 Clean up all material, debris, and rubbish resulting from remodeling work, remove from the building and Site, and legally dispose of. Leave all areas of work in "broom clean" condition.

1.30.2 All debris shall be transported out of the building in covered carts with no materials extending above the cart rim.

- 1.30.3 Make Good surfaces and finishes damaged or disturbed due to The Work to match existing. Ensure materials used to repair damage are compatible with existing.
- 1.30.4 Restore site to condition equal to or, if specified elsewhere, better than existing conditions.
- 1.30.5 Restore areas outside of limits of The Work which are disturbed to original conditions in addition to complying with requirements of Contract Documents.

END OF SECTION

## 1.1 SUMMARY

- 1.1.1 Purpose of Section: Section specifies general requirements pertaining to health and safety for the Work.
- 1.1.2 Read in conjunction with: CCDC 2-2020, Part 9, Protection of Persons and Property.

## 1.2 RELEVANT STATUTES AND REGULATIONS

- 1.2.1 Ontario:
  - 1.2.1.1 Occupational Health and Safety Act - R.S.O. 1990, C. O.1 (as amended)
  - 1.2.1.2 Construction Projects - Ontario Regulation 213/91 (as amended)
  - 1.2.1.3 Asbestos on Construction Projects and in Buildings and Repair Operations - Ontario Regulation 278/05
  - 1.2.1.4 WHMIS Regulation - Ontario Regulation 860 (as amended)

## 1.3 GENERAL REQUIREMENTS

- 1.3.1 Role of Constructor: Contractor must assume role of "Constructor" or "Principal Contractor" as defined under applicable health and safety regulations.
- 1.3.2 Health and Safety Plan: Prepare site-specific Health and Safety Plan before commencement of Work. Consultant's review of Health and Safety plan does not imply approval nor diminish Contractor's responsibility in adhering to requirements of Authorities Having Jurisdiction.
- 1.3.3 First Aid: Provide necessary equipment and facilities for first aid in compliance with requirements of applicable health and safety regulations.
- 1.3.4 Health and Safety Coordinator: Appoint knowledgeable and experienced coordinator responsible for training, enforcing, and monitoring the Health and Safety Plan.
- 1.3.5 Fire Safety Plan:
  - 1.3.5.1 Comply with Section 2.8 of Fire Code in force at Place of the Work.
  - 1.3.5.2 Develop Fire Safety Plan that includes designation of personnel, emergency procedures, fire hazard control, and maintenance of firefighting facilities.
  - 1.3.5.3 Submission and Accessibility: Submit Fire Safety Plan to local Fire Department for approval and keep approved on-site in Fire Safety Plan a secure location.
- 1.3.6 Accident Reporting: Report all accidents causing injury to personnel or damage to property to Owner and provide detailed information.
- 1.3.7 Claim Reporting: Promptly report any claims related to accidents or damage to Owner. Provide detailed information.

**SLCD-SAC**  
**PROJECT NO.** 24.209  
**ISSUED FOR:** FOR BID  
**DATE:** 2024-07-18

**01 35 27**  
**OCCUPATIONAL HEALTH AND SAFETY**

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END OF SECTION

## 1.1 SUMMARY

- 1.1.1 Purpose of Section: Section specifies minimum quality requirements for the Work.
- 1.1.2 Read in conjunction with: CCDC 2-2020, Part 3, Execution of the Work.

## 1.2 REGULATORY REQUIREMENTS

- 1.2.1 Building Code Information:
  - 1.2.1.1 Project has been designed and must be constructed in accordance with requirements of Ontario Building Code, 2012 including any amendments (The Building Code or "OBC").
- 1.2.2 Compliance with Laws: Contract Documents including Drawings, Specifications and other information for the Work are intended to comply with federal, provincial and municipal laws, by-laws, regulations and other requirements of authorities having jurisdiction. Perform Work in accordance with such requirements.
  - 1.2.2.1 Specific design and performance requirements listed in Specifications or indicated on Drawings may exceed minimum requirements established by referenced Building Code; these requirements will govern over the minimum requirements listed in Building Code.
  - 1.2.2.2 Where OBC or Contract Documents do not cover a specific requirement, which is covered by the National Building Code of Canada, latest edition (or NBC), conform to requirements of NBC including its related supplements.
  - 1.2.2.3 Where Specifications do not provide sufficient details for a particular item of Work indicated on Drawings or Schedules, conform to minimum standards indicated in Building Code, and in the absence of more restrictive requirements comply with Specifications, installation methods, and standards of workmanship indicated in OBC, Part 9 "Housing and Small Buildings".

## 1.3 PERMITS, CERTIFICATES AND TRANSCRIPTS

- 1.3.1 Required Documentation Prior to Commencement of the Work:
  - 1.3.1.1 Immediately after receiving notification of award of Contract, submit the following:
    - .1 Workplace Safety & Insurance Certificate status,
    - .2 transcription of insurances
    - .3 other certificates and transcripts required by Contract Documents, Consultant or authorities having jurisdiction.
  - 1.3.1.2 Ensure permits, licenses and certificates included under specific Sections are provided as specified. Forward copies of permits to Owner and Consultant before commencing Work.
- 1.3.2 Building Permit Acquisition and Display:
  - 1.3.2.1 Building permit application and fee payment has been made by Consultant on behalf of Owner.

1.3.2.2 Contractor must display building permit and other relevant permits in visible location at Place of the Work.

1.3.3 Contractor's Responsibilities for Other Permits:

1.3.3.1 Except as otherwise noted, Contractor is responsible for applying for, obtaining, and covering fees for other necessary permits, licenses, certificates, inspections, and approvals mandated by Authorities Having Jurisdiction or Contract Documents.

1.3.3.2 Note: Contractor will be required to apply for a sprinkler permit, as necessary, to facilitate sprinkler relocation in Phase 1 and Phase 2.

#### 1.4 ABBREVIATIONS AND ACRONYMS

1.4.1 Commonly Assigned Meanings: Words and phrases in these Specifications or in other Contract Documents that are not expressly defined in the General Conditions or Supplementary Conditions of the Contract must be interpreted based on their common meanings within the specific context in which they are used. When interpreting these terms, take into account specialized usage within various trades and professions relevant to the terminology. Refer uncertainties to Consultant.

#### 1.5 REFERENCE STANDARDS

1.5.1 "Reference standards" means consensus standards, trade association standards, guides, and other publications expressly referenced in Contract Documents.

1.5.2 Where an edition or version date is not specified, referenced standards shall be deemed to be the latest edition or revision issued by the publisher at the time of bid closing. However if a particular edition or revision date of a specified standard is referenced in an applicable code or other regulatory requirement, the regulatory referenced edition or version shall apply.

1.5.3 Reference standards establish minimum requirements. If Contract Documents call for requirements that differ from a referenced standard, the more stringent requirements shall govern.

1.5.4 If compliance with two or more reference standards is specified and the standards establish different or conflicting requirements, comply with the most stringent requirement. Refer uncertainties to Consultant for clarification.

1.5.5 Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

1.5.6 Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

## 1.6 MINIMUM QUALIFICATION REQUIREMENTS

- 1.6.1 Where Specifications use the term “experienced” in the context of qualifications, the following minimum criteria must be applied; individual Specification Sections may specify additional requirements.
- 1.6.2 Manufacturer Qualifications:
- 1.6.2.1 Experience: Manufacturer must have a minimum of 10 years’ experience in producing systems similar to those specified for the Project.
  - 1.6.2.2 Capabilities: Manufacturer must demonstrate successful in-service performance and have adequate production capacity.
  - 1.6.2.3 Additional Requirements: Must meet qualification, warranty, and technical or factory-authorized service representative requirements.
- 1.6.3 Fabricator Qualifications:
- 1.6.3.1 Experience: Fabricator should have at least 10 years’ experience in producing products similar to those indicated for the Project.
  - 1.6.3.2 Capabilities: Fabricator must have a record of successful in-service performance and sufficient production capacity.
- 1.6.4 Welder Qualifications:
- 1.6.4.1 Certification: Welders must be certified per CSA W47.1 and CSA W59-M, with a minimum certification level of “Division 1” or “Division 2”.
  - 1.6.4.2 Operators: Must be qualified per CSA W47.1 for Work specified in Contract Documents, with a minimum certification level of “Class O”.
  - 1.6.4.3 Inspectors and Supervisors: Must meet CSA W178.1 and CSA W178.2 qualifications and be certified by the Canadian Welding Bureau for “Category (a), Buildings”.
  - 1.6.4.4 Documentation: Submit copies of welding certificates to Consultant prior to Work commencement.
- 1.6.5 Installer Qualifications:
- 1.6.5.1 Experience: Installer should have at least 5 years’ experience in installing systems similar to those specified for the Project and, where applicable, be certified by the manufacturer.
- 1.6.6 Professional Engineer Qualifications:
- 1.6.6.1 Credentials: Must be a member in good standing of the Professional Engineers Ontario (PEO) and legally qualified to practice in the jurisdiction where the Project is located.
  - 1.6.6.2 Experience: Not less than 5 years’ experience in providing engineering services of similar scope.
  - 1.6.6.3 Insurance: Must carry professional liability insurance of not less than \$2,000,000.00. No exceptions.
  - 1.6.6.4 Restrictions: Engineers opting for “Mandatory Disclosure” or “Suggested Disclosure” approaches as permitted by PEO are not eligible to Work on this Project.
- 1.6.7 Manufacturer’s Technical Representative Qualifications:



- 1.6.7.1 Credentials: Must be an authorized, trained, and manufacturer-approved representative to observe and inspect the installation of products similar to those specified for the Project.
- 1.6.8 Testing and Inspecting Agency Qualifications:
  - 1.6.8.1 Credentials: Must be an SCC-accredited laboratory or independent agency acceptable to Owner and Consultant with experience and capability to conduct testing and inspection indicated, as documented according to ASTM E329, and with additional qualifications specified in individual sections. Where required by authorities having jurisdiction, testing agency must be acceptable to such authorities.

## 1.7 QUALITY CONTROL

- 1.7.1 Contractor's Quality Control: Quality Control is Contractor's responsibility. Use qualified personnel trained and experienced in managing and executing quality assurance and quality control procedures as required for the Project.
- 1.7.2 Contractor-Requested Testing: Testing and inspection requested by Contractor but not required by Contract Documents are Contractor's responsibility.
- 1.7.3 Manufacturer's Field Services: Engage factory-authorized service representatives for inspection and observation as specified in Contract Documents or required by manufacturer. Responsibilities include participation in preinstallation meetings, examination of conditions, verification of materials, observation of installation activities, and submission of written reports.
- 1.7.4 Removal and Replacement of Rejected Work: Promptly remove and replace defective Work rejected by Consultant. Promptly repair damage caused by removals or replacements.
- 1.7.5 Equipment and Systems: Refer to Divisions 21, 22, 23, and 26 for detailed requirements.

## 1.8 INDEPENDENT INSPECTION AND TESTING AGENCIES

- 1.8.1 Appointment and Payment: Section 01 21 00 – Allowances designates an amount for retaining and paying independent inspection and testing agencies. These agencies will inspect, test, or perform quality control reviews of parts of the Work. The following are specifically excluded from the inspection and testing allowance and must be included in Contract Price:
  - 1.8.1.1 Inspection and testing mandated by laws, ordinances, rules, regulations, or orders of public authorities.
  - 1.8.1.2 Inspection and testing conducted solely for Contractor's convenience or own quality control.
  - 1.8.1.3 Testing, adjustment, and balancing of conveying systems, mechanical and electrical equipment and systems.
  - 1.8.1.4 Mill tests and certificates of compliance.
  - 1.8.1.5 Inspections and tests specifically designated as Contractor's responsibility in Divisions 02 – 49 of the Specifications.

- 1.8.2 Contractor's Responsibility: Employment of inspection and testing agencies by Owner does not relieve Contractor from responsibility to perform the Work in accordance with Contract Documents.
- 1.8.3 Cooperation with Inspection and Testing Agencies:
  - 1.8.3.1 Allow and arrange for inspection and testing agencies to have access to the Work, including access to off-site manufacturing and fabrication plants.
  - 1.8.3.2 Submit test samples required for testing in accordance with schedule of submittals specified in Section 01 32 00 – Construction Progress Documentation.
  - 1.8.3.3 Provide labour, Construction Equipment and temporary facilities to obtain and handle test samples on site.
- 1.8.4 Notification for Required Inspection and Testing: For inspection and testing required by Contract Documents or by authorities having jurisdiction, provide Consultant and inspection and testing agencies with timely notification in advance of required inspection and testing.
- 1.8.5 Reporting:
  - 1.8.5.1 Contractor's Reporting Obligation: For inspection and testing required by Contract Documents or by regulatory requirements, and performed by Contractor retained inspection and testing agencies, submit to Consultant and Owner copies of reports. Submit within three Working Days after completion of inspection and testing.
  - 1.8.5.2 Owner's Reporting Requirements: For inspection and testing performed by Owner retained inspection and testing agencies, copies of inspection and testing agency reports will be provided to Contractor.

## 1.9 MOCK-UPS

- 1.9.1 General Requirements: Before starting Work specified in technical Specifications, prepare mock-ups for Consultant's review. Obtain Consultant's acceptance before proceeding with corresponding Work.
- 1.9.2 Size and Location: If mock-up location is not indicated in the Drawings or Specifications, locate where directed by Consultant on site.
- 1.9.3 Notification: Inform Consultant minimum 72 hours prior to mock-up construction.
- 1.9.4 Supervision: For mock-up construction, use supervisory personnel and workers who will perform similar tasks on Project.
- 1.9.5 Aesthetic and Workmanship Range: Demonstrate intended aesthetic effects and quality.
- 1.9.6 Revisions and Review:
  - 1.9.6.1 Modify mock-up as required until Consultant acceptance is obtained. Address unsatisfactory conditions identified in preliminary review and modify mock-ups as necessary. Allow time in schedule for multiple reviews.
  - 1.9.6.2 Accepted mock-ups establish an acceptable standard for the Work.

- 1.9.6.3 Acceptance of mock-ups does not imply acceptance of deviations from requirements of Contract Documents, unless such deviations are confirmed in writing by Consultant.
- 1.9.6.4 Unless otherwise specified in the technical Specifications, accepted mock-ups forming part of the Work may remain as part of the Work.
- 1.9.7 Protection and Removal:
  - 1.9.7.1 Protect mock-ups from damage until the Work they represent is complete.
  - 1.9.7.2 Remove mock-ups only when the Work they represent is complete or when otherwise directed by Consultant.
- 1.9.8 Specific Requirements:
  - 1.9.8.1 In-Situ Mock-ups: Refer to Technical Specifications.

END OF SECTION

## 1.1 SUMMARY

- 1.1.1 Purpose of Section: Section specifies responsibilities for temporary facilities and controls for the Work.
- 1.1.2 Read in conjunction with: CCDC 2-2020, Part 3, Execution of the Work; specifically, GC 3.3.

## 1.2 TEMPORARY UTILITIES

- 1.2.1 General: Provide temporary utilities as specified and as otherwise necessary to perform the Work expeditiously. Remove temporary utilities after use.
- 1.2.2 Temporary Water Supply:
  - 1.2.2.1 Connect to and use Owner's existing water supply for temporary use during construction, subject to existing available volume and pressure. Usage is at no cost to Contractor.
- 1.2.3 Temporary Heating And Ventilation
  - 1.2.3.1 Arrange and pay for temporary heating and ventilation required during construction.
  - 1.2.3.2 Vent construction heaters in enclosed spaces to the outside or use flameless type of construction heaters.
  - 1.2.3.3 Provide temporary heat for the Work as required to:
    - .1 Facilitate progress of Work.
    - .2 Protect the Work against dampness and cold.
    - .3 Prevent moisture condensation on surfaces, freezing, or other damage to finishes or stored Products.
    - .4 Maintain specified minimum ambient temperatures and humidity levels for storage, installation and curing of Products.
    - .5 After building is enclosed, maintain interior temperature of minimum 10 degrees C.
  - 1.2.3.4 Provide temporary ventilation for the Work as required to:
    - .1 Prevent accumulations of fumes, exhaust, vapours, gases and other hazardous, noxious, or volatile substances in enclosed spaces, as required to maintain a safe Work environment meeting applicable regulatory requirements.
    - .2 Ensure that hazardous, noxious, or volatile substances do not migrate to Owner occupied spaces.
    - .3 Ventilate temporary sanitary facilities.
  - 1.2.3.5 Do not use permanent building heating and ventilation systems during construction.
- 1.2.4 Temporary Electrical Power and Lighting
  - 1.2.4.1 Owner will provide for temporary power during constructing for temporary lighting and operating of power tools, to the extent available on site. Connect to and use Owner's existing electrical supply for temporary use during construction in accordance with governing

regulations and CSA C22 Series, latest edition. Usage is at no cost to Contractor. Temporary power for equipment requiring more capacity than above is responsibility of Contractor.

- 1.2.4.2 Do not use permanent building lighting systems during construction.

### 1.3 CONSTRUCTION FACILITIES

- 1.3.1 Generally: Provide temporary construction facilities as necessary for performance of the Work and in compliance with applicable regulatory requirements.
  - 1.3.1.1 Maintain temporary construction facilities in good condition for the duration of the Work.
  - 1.3.1.2 Remove temporary construction facilities from Place of the Work when no longer required.
- 1.3.2 Construction Parking
  - 1.3.2.1 Parking at the Place of the Work is available through the purchase of monthly passes.
  - 1.3.2.2 Owner will not be responsible for parking fines incurred by Contractor, Subcontractors or their employees.
- 1.3.3 Traffic Control
  - 1.3.3.1 Do not block public roads, or impede traffic during the course of the Work, unless otherwise permitted. If necessary to temporarily block traffic, Provide and pay for trained personnel acceptable to authorities having jurisdiction to direct traffic as required.
  - 1.3.3.2 Manage construction traffic by using designated roads and by providing trained flag persons to direct public traffic as appropriate.
  - 1.3.3.3 Do not block streets, walkways or allow their use for parking by construction crew or visitors except with approved specific permission from appropriate authorities and in accordance with stipulated standing regulations and restrictions.
- 1.3.4 Site Offices
  - 1.3.4.1 Owner will make space available in existing facility to accommodate site meetings.
- 1.3.5 Sanitary Facilities:
  - 1.3.5.1 Existing designated sanitary facilities within the Place of the Work may be used by Contractor provided they are kept clean and serviced. Repair damage to existing sanitary facilities and perform final cleaning prior to Ready-for-Takeover.
  - 1.3.5.2 Do not use newly installed or constructed permanent washroom facilities during construction.
  - 1.3.5.3 Portable washroom facilities will not be permitted on site.
- 1.3.6 Temporary Fire Protection:
  - 1.3.6.1 Provide and maintain fire protection systems to the satisfaction of relevant authorities, the local fire department, the Consultant, the Owner, and insurance agents.

- 1.3.6.2 Access and Identification: Maintain clear access routes to exits, fire line valves, hoses, and portable fire extinguishers. Ensure devices are visibly marked.
- 1.3.6.3 Fire Extinguishers: Provide and maintain ULC-labeled fire extinguishers in prominent locations in accordance with requirements of authorities having jurisdiction.
- 1.3.6.4 Tarpaulin Use: Only fire-resistant tarpaulins are permitted.
- 1.3.6.5 Hot Work: Comply with CSA W117.2.
- 1.3.6.6 Flammable Materials Storage and Handling:
  - .1 Prohibit bulk storage of flammable liquids on site.
  - .2 Store flammable liquids in approved containers and keep combustibles away from the building.
  - .3 Transport and dispose of flammable materials safely.
- 1.3.6.7 Fire Risk Mitigation:
  - .1 Familiarize workers with fire-fighting equipment locations and usage.
  - .2 Suspend Work if fire protection deficiencies are found.
  - .3 Wet areas before and after hot Work operations where feasible, or use fire-retardant materials where wetting is impractical.
- 1.3.6.8 Fire Watch Requirements:
  - .1 Provide continuous fire watch for each of following activities:
    - .1 open flame activities (e.g. soldering, welding and similar operations).
    - .2 shutdown of fire detection system.
    - .3 shutdown of sprinkler system.
    - .4 any other situation that Consultant may deem appropriate.
  - .2 Equip fire watchers with fire extinguishers and assign them solely to fire watch duties.
  - .3 Fire Reporting Immediately report any fire to the fire department and Consultant, regardless of whether it has been extinguished or not.
- 1.3.7 Elevators
  - 1.3.7.1 Designated existing facility elevators may be used by construction personnel and transporting of materials. Coordinate use with Owner. Provide protective coverings, barriers, devices, signs, or other procedures to protect elevator car and entrance doors and frame.
- 1.3.8 Temporary Safety Signs: Install directional signs as necessary to inform the public and individuals seeking entrance to Project area. Provide safety signs in accordance with requirements of authorities having jurisdiction. Conform to CAN/CSA-Z321.

## 1.4 TEMPORARY BARRIERS AND ENCLOSURES

- 1.4.1 Generally: Provide temporary barriers and enclosures necessary to protect the public and to secure Place of the Work during performance of the Work.
  - 1.4.1.1 Comply with applicable regulatory requirements.
  - 1.4.1.2 Maintain temporary barriers and enclosures in good condition for the duration of the Work.
  - 1.4.1.3 Remove temporary barriers and enclosures from Place of the Work when no longer required.
- 1.4.2 Dust Tight Screens and Partitions
  - 1.4.2.1 Provide dust tight gypsum board and stud partitions to localize interior building areas from dust and noise generating activities. Provide insulation to all screens and partitions.
  - 1.4.2.2 Construction: Unless indicated otherwise on Drawings: 16 mm (5/8") thick gypsum board; 92 mm (3-5/8") deep metal studs space at 400 mm (16") o.c with mineral wool insulation; 16 mm thick (5/8") gypsum board.
  - 1.4.2.3 Finish: Paint public sides of partitions with minimum 2 coats of low VOC paint. Colour: as selected by Consultant.
  - 1.4.2.4 Erect, maintain, and relocate screens and partitions as required to facilitate construction operations and Owner's operational requirements.
  - 1.4.2.5 Doors: Provide lockable doors equipped with door closers as shown on Drawings.
- 1.4.3 Protection of Building Finishes: Provide necessary temporary barriers and enclosures to protect existing and completed or partially completed finished surfaces from damage during performance of the Work.

## 1.5 TEMPORARY CONTROLS

- 1.5.1 Generally: Provide temporary controls as necessary for performance of the Work and in compliance with applicable regulatory requirements.
  - 1.5.1.1 Maintain temporary controls in good condition for the duration of the Work.
  - 1.5.1.2 Remove temporary controls and Construction Equipment used to provide temporary controls from Place of the Work when no longer required.
- 1.5.2 Dust and Particulate Control:
  - 1.5.2.1 Implement and maintain dust and particulate control measures in accordance with applicable regulatory requirements.
  - 1.5.2.2 Execute Work by methods that minimize dust from construction operations and spreading of dust on site or to adjacent properties.
  - 1.5.2.3 Provide temporary enclosures to prevent extraneous materials resulting from sandblasting or similar operations from contaminating air beyond immediate Work area.

- 1.5.2.4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.
- 1.5.2.5 Use appropriate covers on trucks hauling fine, dusty, or loose materials.
- 1.5.3 Pollution Control:
  - 1.5.3.1 Take measures to prevent contamination of soil, water, and atmosphere through uncontrolled discharge of noxious or toxic substances and other pollutants, potentially causing environmental damage.
  - 1.5.3.2 Be prepared, by maintaining appropriate materials, equipment, and trained personnel on site, to intercept, clean up, and dispose of spills or releases that may occur. Promptly report spills and releases that may occur to:
    - .1 authority having jurisdiction,
    - .2 person causing or having control of pollution source, if known, and
    - .3 Owner and Consultant.
  - 1.5.3.3 Contact manufacturer of pollutant, if known and applicable, to obtain safety data sheets (SDS) and ascertain hazards involved and precautions and measures required in cleanup or mitigating actions.
  - 1.5.3.4 Take immediate action to contain and mitigate harmful effects of the spill or release.

END OF SECTION



## 1.1 GENERAL

- 1.1.1 Provide Products that are not damaged or defective, and suitable for purpose intended, subject to specified requirements. If requested by Consultant, furnish evidence as to type, source and quality of Products provided.
- 1.1.2 Unless otherwise specified, maintain uniformity of manufacture for like items throughout.
- 1.1.3 Permanent manufacturer's markings, labels, trademarks, and nameplates on Products are not acceptable in prominent locations, except where required by regulatory requirements or for operating instructions, or when located in mechanical or electrical rooms.

## 1.2 PRODUCT OPTIONS

- 1.2.1 Subject to the provisions of Section 01 25 00 – Substitution Procedures:
  - 1.2.1.1 Wherever a Product or manufacturer is specified by a single proprietary name, provide the named Product only.
  - 1.2.1.2 Wherever more than one Product or manufacturer is specified by proprietary name for a single application, provide any one of the named Products.
- 1.2.2 Wherever a Product is specified by reference to a standard only, provide any Product that meets or exceeds the specified standard. If requested by Consultant, submit information verifying that the proposed Product meets or exceeds the specified standard.
- 1.2.3 Wherever a Product is specified by descriptive or performance requirements only, provide any Product that meets or exceeds the specified requirements. If requested by Consultant, submit information verifying that the proposed Product meets or exceeds the specified requirements.

## 1.3 PRODUCT AVAILABILITY AND DELIVERY TIMES

- 1.3.1 Promptly upon Contract award and periodically during construction, review and confirm Product availability and delivery times. Order Products in sufficient time to meet the construction progress schedule and the Contract Time.
- 1.3.2 If a specified Product is no longer available, promptly notify Consultant via RFI as specified in Section 01 26 13. Propose equivalent product for Consultant review using form appended to Section 01 25 00.
- 1.3.3 If delivery delays are foreseeable, for any reason, promptly notify Consultant.
  - 1.3.3.1 If a delivery delay is beyond Contractor's control, Consultant will provide direction.
  - 1.3.3.2 If a delivery delay is caused by something that was or is within Contractor's control, Contractor shall propose actions to maintain the construction progress schedule for Consultant's review and acceptance.

#### 1.4 STORAGE, HANDLING, AND PROTECTION

- 1.4.1 Store, handle, and protect Products during transportation to Place of the Work and before, during, and after installation in a manner to prevent damage, adulteration, deterioration and soiling.
- 1.4.2 Comply with manufacturer's instructions for storage, handling and protection.
- 1.4.3 Store packaged or bundled Products in original and undamaged condition with manufacturer's seals and labels intact. Do not remove from packaging or bundling until required in Work.
- 1.4.4 Comply with the requirements of the workplace hazardous materials information system (WHMIS) regarding use, handling, storage, and disposal of hazardous materials, including requirements for labeling and the provision of material safety data sheets (MSDS).
- 1.4.5 Store Products subject to damage from weather in weatherproof enclosures.
- 1.4.6 Store sheet Products on flat, solid, supports and keep clear of ground. Slope to shed moisture.
- 1.4.7 Remove and replace damaged Products.

END OF SECTION

## 1.1 VERIFICATION OF EXISTING CONDITIONS

- 1.1.1 Where Work specified in any Section is dependent on the Work of another Section or Sections having been properly completed, verify that Work is complete and in a condition suitable to receive the subsequent Work. Commencement of Work of a Section that is dependent on the Work of another Section or Sections having been properly completed, means acceptance of the existing conditions.
- 1.1.2 Verify that ambient conditions are suitable before commencing the Work of any Section and will remain suitable for as long as required for proper setting, curing, or drying of Products used.
- 1.1.3 Ensure that substrate surfaces are clean, dimensionally stable, cured and free of contaminants.
- 1.1.4 Notify Consultant in writing of unacceptable conditions.

END OF SECTION

## 1.1 SUMMARY

- 1.1.1 Except where otherwise specified in technical Specifications or otherwise indicated on Drawings, comply with requirements of this Section.

## 1.2 MANUFACTURER'S INSTRUCTIONS

- 1.2.1 Install, erect, or apply Products in strict accordance with manufacturer's instructions.
- 1.2.2 Notify Consultant, in writing, of conflicts between Contract Documents and manufacturer's instructions where, in Contractor's opinion, conformance with Contract Documents instead of the manufacturer's instructions may be detrimental to the Work or may jeopardize the manufacturer's warranty.
- 1.2.3 Do not rely on labels or enclosures provided with Products. Obtain written instructions directly from manufacturers.
- 1.2.4 Provide manufacturer's representatives with access to the Work at all times. Render assistance and facilities for such access so that manufacturer's representatives may properly perform their responsibilities.

## 1.3 CONCEALMENT

- 1.3.1 Conceal pipes, ducts, and wiring in floors, walls and ceilings in finished areas:
  - 1.3.1.1 after review by Consultant and authority having jurisdiction, and
  - 1.3.1.2 where locations differ from those shown on Drawings, after recording actual locations on as-built Drawings.
- 1.3.2 Provide incidental furring or other enclosures as required.
- 1.3.3 Notify Consultant in writing of interferences before installation.

## 1.4 FASTENINGS - GENERAL

- 1.4.1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials.
- 1.4.2 Prevent electrolytic action and corrosion between dissimilar metals and materials by using suitable non-metallic strips, washers, sleeves, or other permanent separators to avoid direct contact.
- 1.4.3 Use non-corrosive fasteners and anchors for securing exterior Work and in spaces where high humidity levels are anticipated.
- 1.4.4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage.
- 1.4.5 Keep exposed fastenings to a minimum, space evenly and install neatly.
- 1.4.6 Do not use fastenings or fastening methods that may cause spalling or cracking of material to which anchorage is made.

## 1.5 FASTENINGS - EQUIPMENT

- 1.5.1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.

1.5.2 Bolts shall not Project more than one diameter beyond nuts.

## **1.6 FIRE RATED ASSEMBLIES**

1.6.1 When penetrating fire rated walls, ceiling, or floor assemblies, completely seal voids with fire-stopping materials, smoke seals, or both, in full thickness of the construction element as required to maintain the integrity of the fire rated assembly.

## **1.7 LOCATION OF FIXTURES, OUTLETS AND DEVICES**

1.7.1 Consider location of fixtures, outlets, and devices indicated on Drawings as approximate.

1.7.2 Locate fixtures, outlets, and devices to provide minimum interference, maximum usable space, and as required to meet safety, access, maintenance, acoustic, and regulatory, including barrier free, requirements.

1.7.3 Promptly notify Consultant in writing of conflicting installation requirements for fixtures, outlets, and devices. If requested, indicate proposed locations and obtain approval for actual locations.

## **1.8 PROTECTION OF COMPLETED WORK AND WORK IN PROGRESS**

1.8.1 Adequately protect parts of the Work completed and in progress from any kind of damage.

1.8.2 Promptly remove, replace, clean, or repair, as directed by Consultant, Work damaged as a result of inadequate protection.

1.8.3 Do not load or permit to be loaded any part of the Work with a weight or force that will endanger the safety or integrity of the Work.

## **1.9 REMEDIAL WORK**

1.9.1 Notify Consultant of, and perform remedial Work required to, repair or replace defective or unacceptable Work. Ensure that properly qualified workers perform remedial Work. Coordinate adjacent affected Work as required.

END OF SECTION

## 1.1 REQUEST FOR CUTTING, PATCHING AND REMEDIAL WORK

- 1.1.1 Submit written request in advance of cutting, coring, or alteration which affects or is likely to affect:
  - 1.1.1.1 Structural integrity of any element of the Work.
  - 1.1.1.2 Integrity of weather-exposed or moisture-resistant elements.
  - 1.1.1.3 Efficiency, maintenance, or safety of any operational element.
  - 1.1.1.4 Visual qualities of sight-exposed elements.
  - 1.1.1.5 Work of Owner or Other Contractors.
  - 1.1.1.6 Warranty of Products affected.
- 1.1.2 Include in request:
  - 1.1.2.1 Identification of Project.
  - 1.1.2.2 Location and description of affected Work, including Drawings or sketches as required.
  - 1.1.2.3 Statement on necessity for cutting or alteration.
  - 1.1.2.4 Description of proposed Work, and Products to be used.
  - 1.1.2.5 Alternatives to cutting and patching.
  - 1.1.2.6 Effect on Work of Owner or Other Contractors.
  - 1.1.2.7 Written permission of affected Other Contractors.
  - 1.1.2.8 Date and time Work will be executed.

## 1.2 PRODUCTS

- 1.2.1 Unless otherwise specified, when replacing existing or previously installed Products in the course of cutting and patching Work, use replacement Products of the same character and quality as those being replaced.
- 1.2.2 If an existing or previously installed Product must be replaced with a different Product, submit request for substitution in accordance with Section 01 25 00 - Substitution Procedures.

## 1.3 PREPARATION

- 1.3.1 Inspect existing conditions in accordance with Section 01 71 00 - Examination and Preparation.
- 1.3.2 Provide supports to ensure structural integrity of surroundings; provide devices and methods to protect other portions of the Work from damage.
- 1.3.3 Provide protection from elements for areas that may be exposed by uncovering Work.

## 1.4 EXISTING UTILITIES

- 1.4.1 When breaking into or connecting to existing services' utilities, execute the Work at times directed by local governing authorities, with a minimum of disturbance to the Work, pedestrian and vehicular traffic, and ongoing Owner operations.

- 1.4.2 Where the Work involves breaking into or connecting to existing services, give authority having jurisdiction and Owner at least 48 hours notice for necessary interruption of mechanical or electrical services.
- 1.4.3 Maintain excavations free of water.
- 1.4.4 Keep duration of interruptions to a minimum.
- 1.4.5 Carry out interruptions after regular working hours of occupants, preferably on weekends, unless Owner's prior written approval is obtained.
- 1.4.6 Protect and maintain existing active services. Record location of services, including depth, on as-built Drawings.
- 1.4.7 Construct or erect barriers in accordance with Section 01 50 00 - Temporary Facilities and Controls as required to protect pedestrian and vehicular traffic.

## 1.5 CUTTING, PATCHING, AND REMEDIAL WORK

- 1.5.1 Coordinate and perform the Work to ensure that cutting and patching Work is kept to a minimum.
- 1.5.2 Perform cutting, fitting, patching, and remedial Work including any required excavation and fill, to make the affected parts of the Work come together properly and complete the Work.
- 1.5.3 Provide openings in non-structural elements of the Work for penetrations of mechanical and electrical Work.
- 1.5.4 Perform cutting by methods to avoid damage to other Work
- 1.5.5 Provide proper surfaces to receive patching, remedial Work, and finishing.
- 1.5.6 Perform cutting, patching, and remedial Work using competent and qualified specialists familiar with the Products affected, in a manner that neither damages nor endangers the Work.
- 1.5.7 Do not use pneumatic or impact tools without Consultant's prior approval.
- 1.5.8 Ensure that cutting, patching, and remedial Work does not jeopardize manufacturers' warranties.
- 1.5.9 Refinish surfaces to match adjacent finishes. For continuous surfaces refinish to nearest intersection. For an assembly, refinish entire unit.
- 1.5.10 Fit Work to pipes, sleeves, ducts, conduit, and other penetrations through surfaces with suitable allowance for deflection, expansion, contraction, acoustic isolation, and firestopping.
- 1.5.11 Maintain fire ratings of fire rated assemblies where cutting, patching, or remedial Work is performed. Completely seal voids or penetrations of assembly with firestopping material to full depth or with suitably rated devices.

END OF SECTION

## **1.1 REGULATORY REQUIREMENTS**

- 1.1.1 Comply with applicable regulatory requirements when disposing of waste materials.
- 1.1.2 Obtain permits from authorities having jurisdiction and pay disposal fees where required for disposal of waste materials and recyclables.

## **1.2 GENERAL CLEANING REQUIREMENTS**

- 1.2.1 Provide adequate ventilation during use of volatile or noxious substances. Do not rely on building ventilation systems for this purpose.
- 1.2.2 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- 1.2.3 Prevent cross-contamination during the cleaning process.
- 1.2.4 Notify the Consultant of the need for cleaning caused by Owner or Other Contractors.

## **1.3 PROGRESSIVE CLEANING AND WASTE MANAGEMENT**

- 1.3.1 Do not use Owner's bins for construction waste management. Remove debris from site daily.
- 1.3.2 Maintain the Work in a tidy and safe condition, free from accumulation of waste materials and construction debris.
- 1.3.3 Provide appropriate, clearly marked, containers for collection of waste materials and recyclables.
- 1.3.4 Remove waste materials and recyclables from Work areas, separate, and deposit in designated containers at end of each Working Day. Collect packaging materials for recycling or reuse.
- 1.3.5 Remove waste materials and recyclables from Place of the Work at least daily.
- 1.3.6 Clean interior building areas prior to start of finish Work and maintain free of dust and other contaminants during finishing operations.
- 1.3.7 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly finished surfaces nor contaminate building systems.

## **1.4 FINAL CLEANING**

- 1.4.1 Before final cleaning, arrange a meeting at Place of the Work to determine the acceptable standard of cleaning. Ensure that Owner, Consultant, Contractor and cleaning company are in attendance.
- 1.4.2 Remove from Place of the Work surplus Products, waste materials, recyclables, Temporary Work, and Construction Equipment not required to perform any remaining Work.
- 1.4.3 Provide professional cleaning by a qualified, established cleaning company.
- 1.4.4 Lock or otherwise restrict access to each room or area after completing final cleaning in that area.



- 1.4.5 Re-clean as necessary areas that have been accessed by Contractor's workers prior to Owner occupancy.
- 1.4.6 Remove stains, spots, marks, and dirt from finished surfaces, electrical and mechanical fixtures, furniture fitments, walls, and floors.
- 1.4.7 Clean and polish finishes and equipment, including but not limited to glass, mirrors, hardware, tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and other finished surfaces, as well as mechanical and electrical fixtures. Replace broken, scratched, or otherwise damaged glass.
- 1.4.8 Remove dust from lighting reflectors, lenses, lamps, bulbs, and other lighting surfaces.
- 1.4.9 Vacuum clean and dust exposed wall, floor, and ceiling surfaces, behind grilles, louvres and screens, above suspended ceiling tiles.
- 1.4.10 Clean mechanical, electrical, and other equipment. Replace filters for mechanical equipment if equipment is used during construction.
- 1.4.11 Remove waste material and debris from crawlspaces and other accessible concealed spaces.
- 1.4.12 Remove stains, spots, marks, and dirt from exterior facades.
- 1.4.13 Clean and sweep roofs, clear roof drains, and clean gutters and downspouts.

## **1.5 WASTE MANAGEMENT AND DISPOSAL**

- 1.5.1 Dispose of waste materials and recyclables at appropriate municipal landfills and recycling facilities in accordance with applicable regulatory requirements.
- 1.5.2 Do not burn or bury waste materials at Place of the Work.
- 1.5.3 Do not dispose of volatile and other liquid waste such as mineral spirits, oil, paints and other coating materials, paint thinners, cleaners, and similar materials together with dry waste materials or on the ground, in waterways, or in storm or sanitary sewers. Collect such waste materials in appropriate covered containers, promptly remove from Place of the Work, and dispose of at recycling facilities or as otherwise permitted by applicable regulatory requirements.
- 1.5.4 Cover or wet down dry waste materials to prevent blowing dust and debris.

END OF SECTION

## 1.1 SUMMARY

- 1.1.1 Purpose of Section: Section details integrated testing of fire protection and life safety systems in accordance with OBC and CAN/ULC S1001 to verify performance and interconnectivity of integrated systems to ensure they function cohesively in emergency situations.
  - 1.1.1.1 Scope of Section is limited to testing of interconnections between life safety and/or fire protection systems as required by OBC Division B, Subsection "Integrated Fire Protection and Life Safety Systems". Refer to technical Specification Sections for individual testing and commissioning requirements for systems.
- 1.1.2 Related Requirements: Specifications throughout all Divisions of the Project shall be read as a whole, and may be directly applicable to this Section.

## 1.2 DEFINITIONS

- 1.2.1 Commissioning: Owner-driven process ensuring that all building systems and components operate according to Project requirements and construction documents.
- 1.2.2 Integrated Systems Testing: a code requirement specifically for fire protection and life safety systems to verify and document their interconnections and operational performance in accordance with design criteria.
- 1.2.3 FPLS: Fire Protection and Life Safety.

## 1.3 PREINSTALLATION MEETINGS

- 1.3.1 Project Meetings, generally: in accordance with Section 01 31 00, Project Management and Coordination.
- 1.3.2 Pre-installation Meetings: Schedule and hold a pre-installation meeting at the Project site at least one week before beginning Work on this Section to coordinate activities with related Subcontractors.
  - 1.3.2.1 Required Attendance: Subcontractor performing Work of this Section, representatives from manufacturers and fabricators involved in or affected by installation.
  - 1.3.2.2 Notification: Notify Consultant and Owner of scheduled meeting dates in advance; minimum 72 hour notice required.
  - 1.3.2.3 Agenda:
    - .1 Review progress of related construction activities and preparations for particular activity under consideration.
    - .2 Make note of required sequencing and coordination with materials and activities that have preceded or will follow.
  - 1.3.2.4 Reporting: Record significant discussions, agreements, and disagreements, including required corrective measures and actions.
  - 1.3.2.5 Distribution: Distribute minutes of the meeting to each party present and to other parties requiring information not more than 72 hours after meeting.

## 1.4 COORDINATION

- 1.4.1 Collaborate with Subcontractors responsible for equipment or systems subject to testing under this Section, to ensure comprehensive testing and documentation of interface and integration between various fire protection and life safety systems provided under those divisions.

## 1.5 SUBMITTALS

- 1.5.1 Submittals, generally: in accordance with Section 01 33 00, Submittal Procedures.
- 1.5.2 Proposed Integrated Testing Plan: Submit detailed test plan prepared by Integrated Testing Coordinator and complying with CAN/ULC S1001, highlighting testing protocols, schedules, and identifying involved parties. As a minimum, integrated testing plan must include:
  - 1.5.2.1 Functional objectives of system integrations
  - 1.5.2.2 Sequence of operations – normal and off-normal
  - 1.5.2.3 Test protocol and procedures
  - 1.5.2.4 Procedure for notifying building occupants.
  - 1.5.2.5 Alternative measures – notifications and safety protocols for ensuring occupant safety during testing.
  - 1.5.2.6 Phased occupancy requirements, where applicable.
  - 1.5.2.7 Where required, submit testing plan to Authorities Having Jurisdiction for review.
- 1.5.3 Pre-Testing Confirmation: Submit confirmation from design professionals and installing contractors indicating that systems are installed correctly and functional.
  - 1.5.3.1 Where required, sufficient notification to Authorities Having Jurisdiction to witness integrated systems testing.

## 1.6 CLOSEOUT SUBMITTALS

- 1.6.1 Closeout Submittals, generally: in accordance with Section 01 78 00, Closeout Submittals.
- 1.6.2 Final Integrated Systems Testing Report:
  - 1.6.2.1 Submit documentation providing results of implementation of integrated testing plan final in accordance with section 7 of CAN/ULC-S1001. Report must include:
    - .1 Integrated testing plan,
    - .2 Completed initial integration testing forms with test results,
    - .3 Re-test integration testing forms, if necessary,
    - .4 Pre-integration testing verification documentation for relevant systems.
  - 1.6.2.2 Distribute copies of the final report as follows:
    - .1 One copy to each relevant authority having jurisdiction,
    - .2 One copy to Consultant,

.3 One copy to Owner.

## 1.7 QUALITY ASSURANCE

1.7.1 Integrated Testing Coordinator: Engage an entity with at least five years' experience installing, erecting, or assembling Work similar in material, design, and extent to that indicated, and whose Work has resulted in construction with a track record of successful in-service performance.

1.7.1.1 Integrated Testing Coordinator must be a knowledgeable and experienced individual, firm, corporation, or organization responsible for developing and implementing the integrated testing plan. Where a firm, corporation, or organization is responsible for integrated fire protection and life safety systems testing, a representative of that firm, corporation, or organization shall be designated as the integrated testing coordinator.

## 1.8 PREPARATION OF INTEGRATED TESTING PLAN

1.8.1 Develop integrated test plan as described in section 5 of CAN/ULC-S1001.

1.8.2 Collaborate with relevant Consultants to obtain necessary design performance criteria for integrating fire protection and life safety systems. This includes, but is not limited to :

1.8.2.1 building floor plans,

1.8.2.2 details of control sequences for different systems,

1.8.2.3 mechanical and electrical riser diagrams, if relevant,

1.8.2.4 operating and testing instructions from the trade contractors involved,

1.8.2.5 alternative solutions to prescribed requirements of OBC or standards from the relevant Consultant.

1.8.3 Develop integrated testing plan to include, but not be limited to, following:

1.8.3.1 Objectives for the functionality of system integrations,

1.8.3.2 Operational sequence for the integrated elements of the fire protection and life safety systems, including:

.1 Normal operating conditions,

.2 Fire condition operations,

.3 Procedures for informing occupants about the testing of integrated systems,

1.8.3.3 Safety management protocols, including safety guidelines and notifications, to ensure the safety of occupants and workers during system testing,

1.8.3.4 For phased building testing, include additional procedures for:

.1 Testing each area of the building at different times for staged occupancy permits,

.2 Final testing of whole building once phased areas are complete, including scenarios where areas may be occupied concurrently.

1.8.3.5 Append test procedures for each system-to-system integration as separate sections or as appendix.

- 1.8.3.6 Provide workflow diagram in test plan to depict system dependencies, clearly showing sequence and relationships between different systems.
- 1.8.3.7 Provide testing schedule with overall construction schedule, marking important dates for potential participation of parties in witnessing tests.
- 1.8.3.8 Present initial draft of test plan to Consultant(s) for review. Following feedback and necessary revisions, submit revised draft to Authority Having Jurisdiction.
- 1.8.3.9 In case of design changes in fire protection and life safety equipment or systems affecting integration, revise integrated test plan accordingly and submit for Consultant review before implementation.

## 1.9 TESTING PROCEDURES

- 1.9.1 Develop test procedures and test forms in accordance with requirements of section 6 and section 7 of CAN/ULC-S1001 and as specified herein or in technical Specifications.
- 1.9.2 Testing must include functional objectives of system integrations and sequence of operations under normal and off-normal conditions in accordance with CAN/ULC S1001.
- 1.9.3 Use simulations for tests for non-restorable systems or situations where actual testing could be hazardous.

## 1.10 EXECUTION

- 1.10.1 Execute integrated testing program according to sections 6 and 7 of CAN/ULC-S1001.
- 1.10.2 Prior to starting tests, ensure necessary documentation for installation verification, acceptance testing, notifications, and required inspections by authorities of individual life safety equipment and systems are in place.
- 1.10.3 Notify relevant authorities having jurisdiction about testing schedule and invite them to participate or witness tests.
- 1.10.4 Employ temporary installation measures needed for testing. Maintain log detailing each temporary measure, its installation date, and specific integration test it is meant to support.
- 1.10.5 Planning Phase:
  - 1.10.5.1 Installing Subcontractors for each integrated system to submit documents detailing integration performance of systems.
  - 1.10.5.2 Identified deficiencies are to be documented and forwarded to respective installing Subcontractors for resolution.
- 1.10.6 Implementation Phase:
  - 1.10.6.1 Execute test protocol and procedures as established in planning phase.
  - 1.10.6.2 Ensure procedure for notifying building occupants is in place, considering alternative measures for occupant safety during testing.

- 1.10.6.3 Consider phased occupancy plans and safety of personnel during testing, as applicable.
- 1.10.7 Pre-Testing Requirements: Prior to actual integrated systems testing, complete following pre-testing steps:
  - 1.10.7.1 Obtain written confirmation from installing Subcontractors that they acceptance testing and integrity of installation is confirmed.
  - 1.10.7.2 Secure confirmation from installing contractors regarding correct installation of systems.
  - 1.10.7.3 Establish and document occupant notification procedures.
  - 1.10.7.4 Provide sufficient notification to authorities having jurisdiction to witness integrated systems testing, where required.
- 1.10.8 Sequence of Testing Events
  - 1.10.8.1 Ensure sequence of testing events aligns with integrated testing plan developed during planning phase.
  - 1.10.8.2 Start with functional testing of individual systems to ensure their independent operability.
  - 1.10.8.3 Proceed to integrated system tests, where interoperation and collective response of systems to various scenarios is to be verified.
  - 1.10.8.4 In event of test failure, initiate corrective measures and re-test affected systems until compliance is achieved.
- 1.11 ADJUSTING**
  - 1.11.1 Restore systems to standard operational state after successful integrated testing. If temporary measures were used, remove such measures and update log to record removal date. Include log in final test report.
- 1.12 DEMONSTRATION AND TRAINING**
  - 1.12.1 Train Owner's maintenance personnel to adjust, operate, and maintain life safety systems integration. Demonstration and training must include:
    - 1.12.1.1 Function of integration,
    - 1.12.1.2 Integration method – whether hardwired, network communication, or operating protocols,
    - 1.12.1.3 Type of information – data, commands, monitoring,
    - 1.12.1.4 Temporary measures for future retesting.
- 1.13 SCHEDULE OF INTEGRATED SYSTEMS TESTING**
  - 1.13.1 Applicable portions of the Work subject to testing include, but are not limited to:
    - 1.13.1.1 Division 08 - Openings
    - 1.13.1.2 Division 21 - Fire Suppression
    - 1.13.1.3 Division 22 - Plumbing
    - 1.13.1.4 Division 23 - Heating, Ventilating, and Air Conditioning (HVAC)
    - 1.13.1.5 Division 26 – Electrical
    - 1.13.1.6 Division 28 - Electronic Safety and Security

**SLCD-SAC**  
**PROJECT NO.** 24.209  
**ISSUED FOR:** FOR BID  
**DATE:** 2024-07-18

**01 75 19**  
**INTEGRATED SYSTEMS TESTING - FPLS**

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END OF SECTION

## 1.1 SUMMARY

- 1.1.1 Purpose of Section: Section specifies administrative procedures for Contract closeout.
- 1.1.2 Read in conjunction with: CCDC 2-2020, Part 12, Owner Takeover.

## 1.2 READY-FOR-TAKEOVER

- 1.2.1 The prerequisites to attaining Ready-for-Takeover of the Work are described in the General Conditions and Supplementary Conditions of the Contract.

## 1.3 INSPECTION AND REVIEW BEFORE READY-FOR-TAKEOVER

- 1.3.1 Contractor's Inspection: Before applying for the Consultant's review to establish Ready-for-Takeover of the Work:
  - 1.3.1.1 Ensure that the specified prerequisites to Ready-for-Takeover of the Work are completed.
  - 1.3.1.2 Conduct an inspection of the Work to identify defective, deficient, or incomplete Work.
  - 1.3.1.3 Prepare a comprehensive and detailed list of items to be completed or corrected.
  - 1.3.1.4 Provide an anticipated schedule and costs for items to be completed or corrected.
- 1.3.2 Consultant's Review: Upon receipt of the Contractor's application for review, together with the Contractor's list of items to be completed or corrected, the Consultant will review the Work. The Consultant will advise the Contractor whether or not the Work is Ready-for-Takeover and will provide the Contractor with a list of items, if any, to be added to the Contractor's list of items to be completed or corrected. Provide the Consultant with a copy of the Contractor's revised list.
- 1.3.3 Consultant's Review: Upon receipt of the Contractor's application for review, together with the Contractor's list of items to be completed or corrected, the Consultant and the Contractor shall arrange a mutually satisfactory agreed date and time to jointly review the Work. The Consultant will advise the Contractor whether or not the Work is Ready-for-Takeover. Add additional items, if any, to the Contractor's list of items to be completed or corrected. Provide the Consultant with a copy of the revised list.
- 1.3.4 Maintain the list of items to be completed or corrected and promptly correct or complete defective, deficient and incomplete Work. The Contractor's inspection and Consultant's review procedures specified above shall be repeated until the Work is Ready-for-Takeover and no items remain on the Contractor's list of items to be completed or corrected.
- 1.3.5 When the Consultant determines that the Work is Ready-for-Takeover, the Consultant will notify the Contractor and the Owner in writing to that effect.



#### 1.4 PREREQUISITES TO FINAL PAYMENT

- 1.4.1 After Ready-for-Takeover of the Work and before submitting an application for final payment in accordance with the General Conditions of Contract:
- 1.4.1.1 Correct or complete all remaining defective, deficient, and incomplete Work.
  - 1.4.1.2 Remove from the Place of the Work all remaining surplus Products, Construction Equipment, and Temporary Work.
  - 1.4.1.3 Perform final cleaning and waste removal necessitated by the Contractor's Work performed after Ready-for-Takeover, as specified in Section 01 74 00 – Cleaning and Waste Management.

#### 1.5 PARTIAL OWNER OCCUPANCY

- 1.5.1 Owner reserves right to occupy and use portions of premises, whether partially or entirely completed, or whether completed on schedule or not, Provided such occupancy does not interfere with Contractor's continuing the Work. Partial occupancy or installation of equipment by Owner does not imply acceptance of the Work in whole or in part, nor shall it imply acknowledgment that terms of Contract are fulfilled.
- 1.5.2 If partial Owner occupancy of a part of the Work is required before the date of Ready-for-Takeover of the entire Work of the Contract, the provisions of this Section shall apply, to the extent applicable, to that part of the Work that the Owner intends to occupy.

#### 1.6 SUBSTANTIAL PERFORMANCE OF THE WORK

- 1.6.1 The prerequisites to, and the procedures for, attaining Substantial Performance of the Work, or similar such milestone as provided for in the Construction Act, shall be:
- 1.6.1.1 independent of those for attaining Ready-for-Takeover of the Work, and
  - 1.6.1.2 in accordance with the Construction Act.
- 1.6.2 Procedures: Comply with requirements of The Construction Act and generally with the following:
- 1.6.2.1 Notification: Provide written notice to Owner and Consultant at least 60 days in advance of anticipated date of Substantial Performance of the Work.
  - 1.6.2.2 Contractor Self-Inspection: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents. Notify Consultant in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made. Request Consultant's inspection.
  - 1.6.2.3 Consultant / Contractor Joint Inspection: Consultant and Contractor will inspect Work and identify defects and deficiencies and record such deficiencies on a deficiency list. Contractor must correct Work as directed.

- 1.6.2.4 Deficiency List Submission: Prepare and submit a list of items that have been completed and items that remain to be corrected indicating value of each item on list and reasons why the Work is incomplete.
- 1.6.2.5 Submittals Prior to Substantial Performance: Verify contractual requirements for Substantial Performance certification and submit necessary documents at least 10 days prior to established date for Substantial Performance. As a minimum, the following must be submitted:
  - .1 Certificates from authorities having jurisdiction, permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar documentation.
  - .2 Closeout submittals specified in Section 01 78 00, including operation and maintenance manuals necessary for immediate operation and maintenance of the Work.
  - .3 Copy of as-built Drawings completed to date.
  - .4 Testing, adjusting, and balancing records.
- 1.6.2.6 Completion Tasks: As a minimum the following must be completed prior to requesting Consultant's final inspection. Submit written certificates that following tasks have been performed:
  - .1 Work: completed and inspected for compliance with Contract Documents.
  - .2 Defects: corrected and deficiencies completed.
  - .3 Equipment and systems: tested, adjusted, and balanced and fully operational.
  - .4 Certificates required by Authorities Having Jurisdiction (e.g. Boiler Inspection Branch, Fire Marshall, Utility companies etc.): submitted.
  - .5 Operation of systems: demonstrated to Owner's personnel.
  - .6 Commissioning of systems: completed and copies of final Commissioning Report submitted .
  - .7 Work: complete and ready for final inspection.
- 1.6.2.7 Final Inspection:
  - .1 Upon finishing of completion tasks above, request final inspection of the Work by Consultant.
  - .2 If in Owner's or Consultant's opinion, Work remains incomplete, complete outstanding items and request re-inspection.
- 1.6.2.8 Declaration of Substantial Performance: If Consultant considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.
- 1.6.2.9 Commencement of Lien and Warranty Periods: date of Owner's acceptance of submitted declaration of Substantial Performance to be

date for commencement for warranty period and commencement of lien period unless required otherwise by The Construction Act.

1.6.2.10 Final Payment:

- .1 When Consultant considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.
- .2 If Work remains deemed incomplete by Consultant, complete outstanding items and request re-inspection.

1.6.2.11 Payment of Holdback: after issuance of Certificate of Substantial Performance of Work, submit application for payment of holdback amount in accordance with requirements of the Contract.

## 1.7 FINAL CLEANING

1.7.1 Read in conjunction with: Section 01 74 00.

1.7.2 Perform final cleaning and waste-removal operations in accordance with local laws and ordinances, as well as Federal and Provincial and local environmental regulations.

1.7.3 Cleaning Personnel: Use experienced workers or professional cleaners for final cleaning tasks.

1.7.4 Cleaning Standards: Each surface or unit must be cleaned to condition expected in an average commercial building cleaning and maintenance program.

1.7.5 Manufacturer's Instructions: Comply with manufacturer's written instructions for cleaning processes.

1.7.6 Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of surface being cleaned. Do not use cleaning agents that are potentially hazardous to health, property, or that could damage finished surfaces.

1.7.6.1 Toxicity: Products must be labeled as 'low-hazard' or 'safer' by an ISO 14024-compliant (Type 1) Ecolabel, or other recognized third-party certification.

1.7.6.2 Compliance with Green Seal GS-37: Generally, use cleaning products that comply with Green Seal GS-37. If GS-37 is not applicable to specified cleaning Product, select products that comply with the California Code of Regulations regarding maximum allowable VOC levels.

1.7.6.3 Ingredient Disclosure and Safety: Products must have ingredients disclosed through a Safety Data Sheet (SDS). No ingredients should be present at 100 ppm (0.01%) or above that are classified with GHS codes and hazard statements: H311, H312, H317, H334, H340, H350, H360, H372.

END OF SECTION

## 1.1 DEFINITIONS

- 1.1.1 For the purposes of this Section, the following definitions as defined by the Ontario Association of Architects Practice Tip – PT.14 Version 1.1 apply:
- 1.1.1.1 As-built Drawings: Drawings usually prepared by Contractor as it constructs the Project and upon which it documents the actual locations of building components and changes to the original Contract Documents. These, or a copy of same, are typically turned over to the Consultant or Owner at completion of the Project.
- 1.1.1.2 Record Drawings: Drawings usually prepared by the Consultant when contracted to do so. These are usually a composite of the original Drawings, changes known to the Consultant and information taken from the Contractor's as-built Drawings. Responsibility for preparation of record Drawings may be delegated to Contractor if indicated as such in this Section.

## 1.2 OPERATION AND MAINTENANCE MANUAL

- 1.2.1 Preparation: Prepare a comprehensive operation and maintenance manual, in the language(s) of the Contract, using personnel qualified and experienced for this task.
- 1.2.2 Submission Timing: Submit an initial draft of the operation and maintenance manual for Consultant's review. If required by Consultant's review comments, revise manual contents and resubmit for Consultant's review. If required, repeat this process until Consultant accepts the draft manual in writing.
- 1.2.3 Operation And Maintenance Manual Format:
- 1.2.3.1 Organize data in the form of an instructional manual.
- 1.2.3.2 Hard Copies:
- .1 Number of Copies: Submit 1 of final version to Owner.
  - .2 Binders: vinyl, hard covered, three D-rings, loose leaf, 216 x 279 mm, with spine and face pockets. When multiple binders are used, correlate data into related consistent groupings. Identify contents of each binder on spine.
  - .3 Cover: Identify each binder with typed or printed title "Operation and Maintenance Manual for SLCD-SAC", and subject matter of contents.
  - .4 Arrange content by systems or process flow, under Section numbers and sequence of Table of Contents.
  - .5 Provide tabbed fly leaf for each separate Product or system, with typed description of Product and major component parts of equipment.
  - .6 Text: Manufacturer's printed data, or typewritten data.
  - .7 Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger Drawings to size of text pages.
- 1.2.3.3 Electronic Copies:

- .1 Submission Media: Submit final version to Owner on electronic media acceptable to Owner. When permitted by Owner, digitally transfer files using a secure cloud storage system.
  - .2 Format: Provide electronic copy of Operation and Maintenance Manual in PDF format.
    - .1 Use electronic files prepared by manufacturer where available. If scanning of paper documents is necessary, configure scanned file for minimum readable file size.
    - .2 Bookmarking: Individual documents must be bookmarked based on file names. Name document files to correspond to system, subsystem, and equipment names used on table of contents.
    - .3 Group documents for each system and subsystem into bookmarked files.
  - .3 Shop Drawings: Provide electronic copy of Shop Drawings in manual as 1:1 scaled files in both .dxf and PDF format.
- 1.2.4 Operation And Maintenance Manual Contents:
- 1.2.4.1 General Contents:
    - .1 Table of contents for each volume.
    - .2 Introductory information including:
      - .1 Date of manual submission.
      - .2 Complete contact information for Consultant, subconsultants, other consultants, and Contractor, with names of responsible parties.
      - .3 Schedule of Products and systems indexed to content of volume.
    - .3 For each Product or system, include complete contact information for Subcontractors, Suppliers and manufacturers, including local sources for supplies and replacement parts.
    - .4 Product Data: mark each sheet to clearly identify specific products, options, and component parts, and data applicable to installation. Delete or strike out inapplicable information. Supplement with additional information as required.
    - .5 Reviewed Shop Drawings.
    - .6 Permits, certificates, letters of assurance and other relevant documents issued by or required by authorities having jurisdiction.
    - .7 Warranties.
    - .8 Operating and maintenance procedures, incorporating manufacturer's operating and maintenance instructions, in a logical sequence.
    - .9 Training materials as specified in Section 01 79 00 - Demonstration and Training.
  - 1.2.4.2 Equipment And Systems:

- .1 Each Item of Equipment and Each System: include description of unit or system and component parts. Give function, normal operation characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
  - .2 Panel Board Circuit Directories: provide electrical service characteristics, controls, and communications.
  - .3 Include installed colour coded wiring diagrams.
  - .4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
  - .5 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
  - .6 Provide servicing and lubrication schedule, and list of lubricants required.
  - .7 Include manufacturer's printed operation and maintenance instructions.
  - .8 Include sequence of operation by controls manufacturer.
  - .9 Provide original manufacturer's parts list, illustrations, assembly Drawings, and diagrams required for maintenance.
  - .10 Provide installed control diagrams by controls manufacturer.
  - .11 Provide Contractor's coordination Drawings, with installed colour coded piping diagrams.
  - .12 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
  - .13 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
  - .14 Include testing and balancing reports.
  - .15 Include additional content as specified in technical Specifications sections.
- 1.2.4.3 Products And Finishes:
- .1 Include Product data, with catalogue number, options selected, size, composition, and colour and texture designations. Provide information for re-ordering custom manufactured Products.
  - .2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
  - .3 Include an outline of requirements for routine and special inspections and for regular maintenance to ensure that on-going

performance of the building envelope will meet the initial building envelope criteria.

- .4 Include additional content as specified in technical Specifications sections.

1.2.4.4 Warranties:

- .1 Separate each warranty with index tab sheets keyed to Table of Contents listing.
- .2 List each warrantor with complete contact information.
- .3 Verify that documents are in proper form and contain full information. Ensure that warranties are for the correct duration and are in Owner's name.
- .4 Include maintenance bond(s), if any.

**1.3 CONTRACTOR'S AS-BUILT DRAWINGS**

1.3.1 Submit final as-built Drawings as specified in Section 01 32 00 – Construction Progress Documentation to Consultant.

1.3.1.1 Hard Copies: Submit 1 copy of as-built Drawings (redlines) to Consultant.

**1.4 SPARE PARTS, MAINTENANCE MATERIALS, AND SPECIAL TOOLS**

1.4.1 Supply spare parts, maintenance materials, and special tools in quantities specified in technical Specifications sections.

1.4.2 Ensure spare parts and maintenance materials are new, not damaged nor defective, and of same quality, manufacturer, and batch or production run as installed Products.

1.4.3 Provide tags for special tools identifying their function and associated Product.

1.4.4 Deliver to and store items at location directed by Owner at Place of the Work. Store in original packaging with manufacturer's labels intact and in a manner to prevent damage or deterioration.

1.4.5 Catalogue all items and submit to Consultant an inventory listing organized by Specifications section. Include Consultant reviewed inventory listing in operation and maintenance manual.

END OF SECTION

## 1.1 GENERAL

- 1.1.1 Unless indicated otherwise, standard one-year warranty must commence from the date of Ready-for-Takeover.
- 1.1.2 Owner will notify Consultant in writing immediately upon discovering defects during warranty period.
- 1.1.3 During month prior to conclusion of one-year warranty period, inspection of Project must be conducted the Owner's representative, Consultant, and Contractor. Contractor must address defects arising from faulty materials or workmanship without delay.
- 1.1.4 Upon expiry of one-year warranty period, Contractor must transfer all extended warranties provided by Subcontractors to Owner, with formal notification of this assignment to relevant Subcontractors.

## 1.2 EXTENDED WARRANTIES

- 1.2.1 Provide extended warranties outlined in Technical Specifications. Extended warranties must begin immediately after expiry of contractual one-year warranty and must be co-signed by the manufacturers or suppliers. Submission of extended warranties is responsibility of Contractor.
- 1.2.2 If validity of extended warranties is contingent upon proper maintenance and servicing of specified elements, provide comprehensive maintenance and servicing plan to Owner in Operation and Maintenance Manuals specified in Section 01 78 00.

END OF SECTION



## 1.1 SUMMARY

- 1.1.1 Demonstrate and provide training to Owner's personnel on operation and maintenance of equipment and systems prior to scheduled date of Ready-for-Takeover.
- 1.1.2 Owner will provide list of personnel to receive training and will coordinate their attendance at agreed upon times.
- 1.1.3 Coordinate and schedule demonstration and training provided by Subcontractors and Suppliers.

## 1.2 SUBMITTALS

- 1.2.1 Submit proposed dates, times, durations, and locations for demonstration and training of each item of equipment and each system for which demonstration and training is required. Allow sufficient time for training and demonstration for each item of equipment or system, or time as may be specified in technical Specifications.
- 1.2.2 Consultant and Owner will review submittal and advise Contractor of any necessary revisions.
- 1.2.3 Submit report(s) within 5 Working Days after completion of demonstration and training:
  - 1.2.3.1 identifying time and date of each demonstration and training session,
  - 1.2.3.2 summarizing the demonstration and training performed, and
  - 1.2.3.3 including a list of attendees.

## 1.3 PREREQUISITES TO DEMONSTRATION AND TRAINING

- 1.3.1 Testing, adjusting, and balancing has been performed in accordance with Contract Documents.
- 1.3.2 Equipment and systems are fully operational.
- 1.3.3 Copy of completed operation and maintenance manual is available for use in demonstration and training.
- 1.3.4 Conditions for demonstration and training comply with requirements specified in technical Specifications.

## 1.4 DEMONSTRATION AND TRAINING

- 1.4.1 Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, and maintenance of each item of equipment and system.
- 1.4.2 Review operation and maintenance manual in detail to explain all aspects of operation and maintenance.
- 1.4.3 Prepare and insert additional information in operation and maintenance manual if required.

END OF DIVISION 01

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**DEMONSTRATION AND TRAINING**

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END OF SECTION

## GENERAL REQUIREMENTS

### 1. WORK INCLUDED

- .1 Provide labour, materials and equipment necessary to perform structural alterations indicated or noted on the drawings or in the specifications including:
  - .1 Verification of field conditions and dimensions.

### 2. RESPONSIBILITY

- .2 Be responsible for all damage arising out of the work of the Contract and for all damage to adjacent private or public property. Make good damages caused in the performance of this contract to the satisfaction of the Consultant.
- .3 Review of scanning drawings by the Consultant shall in no way relieve the Contractor of their responsibility for carrying out the work in a manner which ensures the complete safety of the existing building, persons and adjacent property and also ensures that no damage occurs thereto, during any period of the alterations.

### 3. GENERAL

- .4 The drawings and Terms of Reference were prepared using the following assumptions:
  - .1 The existing building is built in accordance with common good practice at the time of construction and the original contract documents, significant details of which have been reproduced on the drawings.
  - .2 The workmanship and materials employed on the existing buildings were of good quality and the building has not deteriorated significantly.
  - .3 Bearing walls, structural steel, structural concrete and timber framing is reasonably true and plumb.

### 4. EXAMINATION

- .5 Examine the site and the building on it. Establish conditions under which the work is to be completed. The Owner will make no allowance for conditions that were apparent at the time of submission of tender. Direct all inquiries to the Consultant.
- .6 Before proceeding with alterations to structural members, verify that the assumptions described above are correct. Should the assumptions, described above, not be correct notify the Consultant immediately. The Consultant will determine revisions necessary to the work as shown. The Contractor shall provide the necessary assistance to enable the consultant to determine the extent of the revisions necessary.
- .7 Investigate the existing building to determine actual field conditions, take field dimensions, probe structural bearing members to determine soundness and perform other inspection necessary to schedule the sequence of operations, and prepare shop drawings if necessary.

## END OF SECTION

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## **PART 1 GENERAL**

### **1.1 GENERAL INSTRUCTIONS**

1.1.1 Read and adhere to the General Conditions of the construction contract, the Supplementary Conditions, as well as the requirements of Division 01 of the Specifications and any other documents referenced in this Section.

### **1.2 SUMMARY**

1.2.1 Provide labour, materials, products, equipment and services to complete the SELECTIVE INTERIOR DEMOLITION, ALTERATIONS AND REPAIRS work specified herein. This includes, but is not necessarily limited, to:

1.2.1.1 Requirements for work alterations work to existing construction, components, systems, or equipment.

1.2.1.2 Demolition and removal of selected portions of building.

1.2.2 Related Requirements: Specifications throughout all Divisions of the Project shall be read as a whole, and may be directly applicable to this Section.

### **1.3 REFERENCES**

1.3.1 The latest published edition of a reference shall be applicable to this Project unless identified by a specific edition date.

1.3.2 All reference amendments adopted prior to the Bid Closing date of this Project shall be applicable to this Project.

1.3.3 All materials, installation and workmanship shall comply with all applicable requirements and standards

1.3.4 American National Standards Institute

1.3.4.1 ANSI/ASSP A10.6-2006 (R2016): Safety And Health Program Requirements For Demolition Operations

1.3.5 National Fire Protection Association

1.3.5.1 NFPA 241: Standard for Safeguarding Construction, Alteration, and Demolition Operations, 2019 Edition.

### **1.4 DEFINITIONS**

1.4.1 Remove: Detach items from existing construction and legally dispose of them off-site unless indicated on Drawings and Schedules to be removed and salvaged or removed and reinstalled.

1.4.2 Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner ready for reuse.

1.4.3 Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated on Drawings and Schedules.

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- 1.4.4 Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated on Drawings and Schedules to be removed, removed and salvaged, or removed and reinstalled.
- 1.4.5 Cutting: Removal of existing construction necessary to permit installation or performance of other Work.
- 1.4.6 Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

## **1.5 MATERIALS OWNERSHIP**

- 1.5.1 Unless otherwise indicated on Drawings and Schedules, demolition waste becomes property of Contractor.

## **1.6 ADMINISTRATIVE REQUIREMENTS**

- 1.6.1 Examine Specification for work covered by this Section to ensure complete understanding of requirements and responsibilities such as materials to be used, storage and handling, installation, sequencing, quality control, Project staffing, restrictions, and other construction-related matters.
- 1.6.2 Pre-Installation Meeting:
  - 1.6.2.1 Before beginning work of this Section, hold a pre-installation meeting at Project site with relevant parties to assess Project requirements and site conditions. Refer to Division 01 - Project Meetings for additional information.
  - 1.6.2.2 Inspect and discuss condition of construction to be selectively demolished.
  - 1.6.2.3 Review structural load limitations of existing structure.
  - 1.6.2.4 Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
  - 1.6.2.5 Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
  - 1.6.2.6 Review areas where existing construction is to remain and requires protection.

## **1.7 SUBMITTALS**

- 1.7.1 Proposed Protection Measures: Submit drawings that indicate the measures proposed for protecting individuals and property, for dust control and for noise control. Indicate proposed locations and construction of barriers.
- 1.7.2 Cutting and Patching Proposal:
  - 1.7.2.1 Submit a proposal for review by Consultant before cutting and patching activities are performed for cutting, coring, or alteration which affects or is likely to affect:
    - .1 Structural integrity of any element of the Work.
    - .2 Integrity of weather-exposed or moisture-resistant elements.

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- .3 Efficiency, maintenance, or safety of any operational element.
- .4 Warranty of Products affected.
- 1.7.2.2 Include in request:
  - .1 Location and description of affected work, including drawings or sketches as required.
  - .2 Statement on necessity for cutting or alteration.
  - .3 Description of proposed work, and Products to be used.
  - .4 Alternatives to cutting and patching.
  - .5 Date and time work will be executed.
- 1.7.3 Pre-demolition documentation: Take photos and videos of existing conditions at the site before starting demolition, alterations or repair work. Clearly show conditions that could be misinterpreted as damage caused by demolition activities.

## 1.8 FIELD CONDITIONS

- 1.8.1 Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- 1.8.2 Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
  - 1.8.2.1 Hazardous materials will be removed by Owner before start of the Work.
- 1.8.3 Location and description of materials and conditions shown on Drawings are indicated from information available and are approximate only. Verify existing conditions on-site.
- 1.8.4 Survey of Existing Conditions: Record existing conditions that affect the Work by use of preconstruction photographs and preconstruction videos.
- 1.8.5 Discrepancies: Notify Consultant of discrepancies between existing conditions and Drawings before proceeding with removal and dismantling work.
- 1.8.6 Existing Space Size Limitations: Materials, products and equipment used for completing the work of this Section and for carrying debris, materials and products must clear existing spaces, areas, rooms and openings.

## PART 2 PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- 2.1.1 Regulatory Requirements: Comply with governing environmental notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- 2.1.2 Standards: Comply with CSA S350, ANSI/ASSE A10.6 and NFPA 241.

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- 2.1.3 When for cutting and patching, use replacement Products of the same type and quality as the ones being replaced unless otherwise indicated. Use materials that match existing materials in appearance and functionality.
- 2.1.4 Before installation, submit Samples to Consultant for review.
- 2.1.5 Preserve aesthetic and structural integrity of materials and construction during cutting, patching and alteration work.
- 2.1.6 Obvious existing circumstances, installations, and obstruction impacting the work of this Section must be considered and included as though fully demonstrated or described.
- 2.1.7 Matching Existing and Adjacent Work: Unless otherwise stated, new work must match existing and adjacent work in all aspects. Repairs and/or continuations of previous work must be relatively undetectable when viewed from a distance 1.8 meters (6 feet) under finished lighting conditions.

## 2.2 MATERIALS

- 2.2.1 Floor Patching and Levelling Compounds: Cement-based, trowelable, self-leveling compounds compatible with specified floor finishes. Gypsum-based materials are not acceptable.
- 2.2.2 Concrete Unit Masonry: Lightweight concrete masonry units, complete with mortar conforming to CSA A165 Series. Provide units cut and trimmed to fit existing openings to be filled. Provide standard hollow core, square end, and bond beam units as shown on Drawings.
- 2.2.3 Gypsum Board Patching Compounds: to ASTM C475/C475M, bedding and finishing types thinned to provide skim coat consistency to patch and prepare existing gypsum board walls ready for new finishes.
- 2.2.4 Hoarding and Dust Screens: Refer to Division 01 - Temporary Barriers and Enclosures for stud framing and gypsum board sheathing materials.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- 3.1.1 Verify that utilities have been disconnected and capped before starting selective demolition operations.
- 3.1.2 If available, review as-built documents of existing construction provided by Owner. Owner does not guarantee that existing conditions are same as those indicated on as-built documents.
- 3.1.3 Inspect existing conditions and compare them to Drawings to determine scope of selective demolition, alterations and repair work.
- 3.1.4 If unexpected mechanical, electrical, or structural elements conflict with intended function or design, examine nature and extent of conflict. Submit written report to Consultant promptly.

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- 3.1.5 Notify Consultant in writing of any conditions which would be detrimental to the installation. Commencement of work implies acceptance of previously completed work.

### **3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS**

- 3.2.1 Existing Services/Systems to Remain: Maintain services/systems indicated on Drawings and Schedules to remain and protect them against damage.
- 3.2.2 Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems indicated serving areas to be selectively demolished.
- 3.2.3 Arrange to shut off utilities indicated on Drawings and Schedules with utility companies.
- 3.2.4 If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
- 3.2.5 Refer to Divisions 21, 22, 23, and 26 for additional requirements related to electrical and mechanical demolition.

### **3.3 PREPARATION**

- 3.3.1 Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

### **3.4 CORE DRILLING**

- 3.4.1 Use nondestructive, non-ionizing ground penetrating radars to locate reinforcing steel in concrete slabs prior to cutting or coring.
- 3.4.2 Obtain confirmation of final locations of cores from Consultant before proceeding.
- 3.4.3 Core concrete slabs to avoid reinforcing steel, electrical conduit or water pipes. Adjust core location and coordinate with Consultant where slab features interfere with core drilling.

### **3.5 CUTTING AND PATCHING**

- 3.5.1 Floors and Walls:
  - 3.5.1.1 Where walls or partitions that are demolished extend from one finished area into another, patch and repair floor and wall surfaces in new space.
  - 3.5.1.2 Provide a level and smooth surface having uniform finish colour, texture, and appearance.
  - 3.5.1.3 Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform colour and appearance.
  - 3.5.1.4 Provide materials and comply with installation requirements specified in other Sections of the Specifications.
  - 3.5.1.5 When patching occurs on a painted surface, apply primer and intermediate paint coats over the patch before applying the final paint



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coat over the entire surface containing the patch. Apply additional coats until the patch matches adjacent surfaces.

- 3.5.2 Ceilings: patch, repair, or re hang existing ceilings as necessary to provide an even plane surface of uniform appearance.

### **3.6 SELECTIVE DEMOLITION ACTIVITIES**

- 3.6.1 Demolition and remove existing construction only to the degree necessary by new construction as shown on Drawings and Schedules. Comply with the requirements of authorities having jurisdiction regarding the use of demolition methods and procedures.
- 3.6.2 Cut holes neatly, squarely, and to size. Use cutting procedures that will not damage existing or adjacent construction. Minimize surface disturbance to adjacent construction. Use hand or small power tools design for sawing or grinding. Do not use tools designed for hammering and chopping. Provide temporary protection to openings that must remain in place.
- 3.6.3 Place selective demolition equipment and remove debris in a manner that avoids excessive loads on supporting walls, floors, and framing.
- 3.6.4 Existing Items to Remain: Protect construction that has been indicated to remain from damage and soiling during selective demolition activities.
- 3.6.4.1 Some items may need to be removed during selective demolition, stored, cleaned, and returned in their original positions after demolition activities are completed. Such items will be identified on-site by Consultant.

### **3.7 DISPOSAL OF MATERIALS**

- 3.7.1 Do not allow demolished materials to accumulate on-site.
- 3.7.2 Burning: Do not burn demolished materials.

### **3.8 CLEANING**

- 3.8.1 Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION

## **PART 1 GENERAL**

### **1.1 GENERAL INSTRUCTIONS**

- 1.1.1 Read and conform to: The general provisions of the Contract, including General and Supplementary Conditions; and the requirements of Division 01 Specifications and any additional documents referred to in this Section.
- 1.1.2 Contractor is solely responsible for dividing the Work among Subcontractors and Suppliers. Consultant and Owner assume no responsibility to act as arbiters or to establish subcontract limits between Sections or Divisions of the Work. Any references to related work items contained in this Section are provided for convenience only

### **1.2 SUMMARY**

- 1.2.1 Provide labour, materials, Products, equipment and services to complete the concrete floor finishing work specified herein. This includes, but is not necessarily limited, to:
  - 1.2.1.1 General requirements for concrete floor finishing.
  - 1.2.1.2 Concrete sealers and other topical treatments for concrete.
  - 1.2.1.3 Auxiliary materials required for a complete installation.
- 1.2.2 Related Requirements: Specifications throughout all Divisions of the Project shall be read as a whole, and may be directly applicable to this Section. Related requirements provided below are for convenience purposes only:
  - 1.2.2.1 Section 07 92 00 - Joint Sealants.
  - 1.2.2.2 Refer to Structural Drawings

### **1.3 REFERENCES**

- 1.3.1 Reference Standards: Unless otherwise indicated in this Section or the Building Code, the latest published editions of reference standards as of the Project's Bid Closing deadline apply.

### **1.4 PREINSTALLATION MEETINGS**

- 1.4.1 Project Meetings, generally: in accordance with Section 01 31 00, Project Management and Coordination
- 1.4.2 Pre-installation Meetings: Schedule and hold a pre-installation meeting at the Project site at least one week before beginning work on this Section to coordinate activities with related Subcontractors.
  - 1.4.2.1 Required Attendance: Subcontractor performing work of this Section, representatives from manufacturers and fabricators involved in or affected by installation.
  - 1.4.2.2 Notification: Notify Consultant and Owner of scheduled meeting dates in advance; minimum 72 hour notice required.
  - 1.4.2.3 Agenda:

- .1 Review progress of related construction activities and preparations for particular activity under consideration.
  - .2 Make note of required sequencing and coordination with materials and activities that have preceded or will follow.
- 1.4.2.4 Reporting: Record significant discussions, agreements, and disagreements, including required corrective measures and actions.
- 1.4.2.5 Distribution: Distribute minutes of the meeting to each party present and to other parties requiring information not more than 72 hours after meeting.

## 1.5 ADMINISTRATIVE REQUIREMENTS

- 1.5.1 Coordination: Coordinate with concrete floor placement and concrete floor curing, and other work having a direct bearing on work of this section.
- 1.5.1.1 Review Specification for work included under this Section and determine complete understanding of requirements and responsibilities relative to work included, storage and handling of materials, materials to be used, installation of materials, sequence and quality control, Project staffing, restrictions on areas of placement and other matters affecting construction, to permit compliance with intent of this Section.

## 1.6 SUBMITTALS

- 1.6.1 Submittals, generally: in accordance with Section 01 33 00, Submittal Procedures.
- 1.6.2 Product Data: Submit product characteristics, catalogue cuts, installation instructions and other relevant information for each material and product used for concrete floor finishing work specified in this Section.
- 1.6.3 Shop Drawings: Submit Shop Drawings indicating material layouts, details of construction, connections, and relationship with adjacent construction. As a minimum indicate following:
- 1.6.3.1 Include plans, elevations, sections and details as applicable.
  - 1.6.3.2 Indicate field-measured dimensions on Shop Drawings.
- 1.6.4 Embodied Carbon / Environmental Product Declarations (EPDs): When available, submit product-specific or industry-wide EPDs conforming to ISO 14025 or other recognized environmental Product declaration framework meeting following criteria:
- 1.6.4.1 EPD Scope: Must cover Cradle-to-Gate (A1 to A3) as a minimum.
  - 1.6.4.2 EPD Impact Categories: Must report Global Warming Potential (GWP) in form of unit of kgCO<sub>2</sub>e/declared unit as a minimum.
  - 1.6.4.3 Product Options: Give preference to Products with compliant documentation when choice is at Contractor's option.
- 1.6.5 Material Ingredient Disclosure: When available, submit documentation disclosing chemical inventory of materials to at least 0.1% (1000ppm) meeting following criteria:
- 1.6.5.1 Standard: Health Product Declaration (HPD) Open Standard, Cradle to Cradle v2 (Basic level) or Cradle to Cradle v3 (Bronze level),

International Living Future Institute (ILFI) Declare, or other approved material ingredient declaration framework.

- 1.6.5.2 Product Options: Give preference to Products with compliant documentation when choice is at Contractor's option.
- 1.6.6 Low-Emitting Materials: For applicable Products specified or used for activities of this Section (i.e., site-applied coatings, adhesives, and sealants), submit certifications from third-party organizations indicating compliance with VOC Emissions and VOC Content requirements specified in this Section.
- 1.6.7 Samples: Submit selection and verification samples for Products requiring colour, texture, or design selection. Submit manufacturer's list of finishes or colour swatches for Consultant's selection.

## 1.7 CLOSEOUT SUBMITTALS

- 1.7.1 Closeout Submittals, generally: in accordance with Section 01 78 00, Closeout Submittals.
- 1.7.2 Operating and Maintenance Data: Submit care and maintenance instructions for concrete floor finishing to be included in building operation and maintenance manual.
- 1.7.3 Warranty Documentation: Submit copy of extended warranties specified in this Section.

## 1.8 QUALITY ASSURANCE

- 1.8.1 Manufacturer Qualifications: Provide Products for work of this Section by manufacturer with at least 10 years' experience manufacturing such materials.
- 1.8.2 Installer Qualifications: Engage an entity with at least five years' experience installing, erecting, or assembling work similar in material, design, and extent to that shown on Drawings and Schedules, and whose work has resulted in construction with a track record of successful in-service performance.
- 1.8.3 Single Source Responsibility: Obtain primary materials for this Section from a single source by a single manufacturer, and secondary materials from sources recommended by manufacturers of primary materials.

## 1.9 DELIVERY, STORAGE AND HANDLING

- 1.9.1 Product Requirements, generally: in accordance with Section 01 61 00, Common Product Requirements.
- 1.9.2 Deliver, store and handle concrete floor finishing materials in accordance with manufacturer's written instructions.
- 1.9.3 Deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- 1.9.4 Store materials in off-ground, in clean, dry, well-ventilated area. Comply with CSA A23.1, Clause 7.1.
- 1.9.5 Replace defective or damaged materials with new.

## 1.10 SITE CONDITIONS

### 1.10.1 Ambient Conditions:

- 1.10.1.1 Do not finish floors until interior heating system is operational or a minimum ambient temperature of 10 Deg C (50 Deg F) can be maintained.
- 1.10.1.2 Ensure concrete substrate is within moisture limits prescribed by flooring manufacturer.

### 1.10.2 Ventilation: Sufficient to prevent injurious gases from temporary heat or other sources affecting concrete.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- 2.1.1 Provided requirements of Contract Documents are satisfied, the following manufacturers may supply Products for work this Section:
  - 2.1.1.1 CPD Construction Products.
  - 2.1.1.2 Euclid Chemical Canada Ltd.
  - 2.1.1.3 Sika Canada Inc.
  - 2.1.1.4 W.R. Meadows Inc., Canada
- 2.1.2 Substitution Limitations: In accordance with requirements of Section 01 25 00, Substitution Procedures.

### 2.2 PERFORMANCE / DESIGN CRITERIA

- 2.2.1 Perform Work in accordance with CSA-A23.1/A23.2.
- 2.2.2 Coordinate with finish flooring Supplier and installer to ensure adequate slab flatness is provided for floor finish scheduled to be installed on slab.
- 2.2.3 Static Coefficient of Friction: Ensure floor surfaces are stable, firm and slip resistant after completing finishing procedures (where exposed). Provide Products with the following minimum values as determined by ASTM D2047 unless otherwise indicated on Drawings and Schedules:
  - 2.2.3.1 Level Surfaces: Minimum 0.6.
  - 2.2.3.2 Ramp Surfaces: Minimum 0.8.
- 2.2.4 Coordinate with finish flooring Supplier and installer to ensure adequate slab flatness is provided for floor finish scheduled to be installed on slab.
- 2.2.5 Ensure concrete is finished to achieve the following tolerances:
  - 2.2.5.1 Under surfaces scheduled to have thick-set tile : F (F<sub>F</sub>) 20 and F (F<sub>L</sub>) 15.
  - 2.2.5.2 Under Resilient Finishes, Epoxy Finish and Carpeted Areas: F (F<sub>F</sub>) 25 and F (F<sub>L</sub>) 20.
  - 2.2.5.3 Under Thin-set flooring, and concrete surfaces exposed to view (sealed concrete): F (F<sub>F</sub>) 35 and F (F<sub>L</sub>) 25.
- 2.2.6 VOC Content and Emissions:

- 2.2.6.1 VOC Emissions: For applicable items in this Section, comply with CDPH Standard Method v1.2–2017 (CA Spec 01350) and ensure products are certified per UL 2818, SCS Global Gold, or equivalent.
- 2.2.6.2 VOC Content Requirements: Wet-applied materials used in scope of this Section must conform to the following:
  - .1 Paints and Coatings: SCAQMD Rule 1113 or CARB SCM.
  - .2 Adhesives and Sealants: SCAQMD Rule 1168.
  - .3 Methylene chloride and perchloroethylene must not be intentionally added in paints, coatings, adhesives, or sealants.

### 2.3 PENETRATING CONCRETE FLOOR SEALERS AND DENSIFIERS

- 2.3.1 Blend of silicate and silicate polymers that penetrate concrete surfaces and chemically react to provide an increase in surface density, durability, and abrasion resistance.
  - 2.3.1.1 Acceptable Products:
    - .1 "Euco Diamond Hard" by Euclid Chemical,
    - .2 "Sikafloor 3S" by Sika Canada Inc.,
    - .3 "CPD Hard-Cure" by CPD Construction Products
    - .4 "Liqui Hard Ultra" by W.R. Meadows Inc., Canada
  - 2.3.1.2 Use in following locations: Where interior horizontal concrete slabs are indicated on Drawings and Schedules to be 'sealed' or marked as 'exposed' on Drawings and Schedules. Do not use on floors exposed to water, salts and inorganic acids.

### 2.4 FILM-FORMING CONCRETE SEALERS (CURING AND SEALING COMPOUNDS)

- 2.4.1 Low VOC water based curing/sealing compound conforming to ASTM C 1315, Type 1 (clear), Class A (non-yellowing) or equivalent to CSA A23.1.
  - 2.4.1.1 Basis-of-Design Products: Sealtight Vocomp-20" by W.R. Meadows Inc., Canada or approved equivalent as follows:
    - .1 "Aqua-Cure VOX" by Euclid Chemical,
    - .2 "Sika Florseal W.B." by Sika Canada Inc.,
    - .3 "Cipadeck Cure & Seal WB" by CPD Construction Products
- 2.4.2 Verify compatibility with subsequent finishes.
- 2.4.3 Use in following locations: Where surfaces other than concrete slabs are indicated on Drawings and Schedules to be 'sealed' or marked as 'exposed' on Drawings and Schedules.

### 2.5 ACCESSORIES

- 2.5.1 Wet Cure Blanket: Clear polyethylene film to ASTM C171, minimum thickness 0.15 mm complying with maximum allowable moisture loss requirements of ASTM C156.

2.5.2 Concrete Slab Joint Filler: Two (2) component epoxy or polyurea, load-bearing, self-levelling concrete slab joint Filler, 100% solids compound, with a minimum Shore A Hardness of 80, colour to match slab colour

2.5.2.1 Acceptable Products (Polyurea):

- .1 "Euco QWIKjoint UVR (Polyurea)" by Euclid Canada
- .2 "MasterSeal CR 100" by Master Builders Solutions Canada Inc. (Formerly BASF Canada Inc.)
- .3 Approved equivalent.

2.5.2.2 Acceptable Products (Epoxy):

- .1 "Euco 700" or "QWIKjoint 200" by Euclid Chemical,
- .2 "Epolith P" by Master Builders Solutions Canada Inc. (Formerly BASF Canada Inc.)
- .3 "Loadflex" by Sika Canada Inc.,
- .4 "ReziWeld Flex" by W.R. Meadows of Canada,
- .5 "Cipadam <sup>TM</sup> E-13" by CPD Construction Products.

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- 3.1.1 Verify actual site conditions and location of adjacent materials prior to commencing work. Notify Consultant in writing of any conditions which would be detrimental to the installation. Commencement of work implies acceptance of previously completed work.
- 3.1.2 Measure for floor flatness ( $F_F$ ) and floor levelness ( $F_L$ ) tolerances for floors to ASTM E1155/ASTM E1155M, within 48 hours after slab installation.
- 3.1.3 Correct the slab surface if the actual  $F$  ( $F_F$ ) or  $F$  ( $F_L$ ) number for the floor installation measures less than required.
- 3.1.4 Correct defects in the floor by grinding or removal and replacement of the defective work. Areas requiring corrective work will be identified. Re-measure corrected areas by the same process.

### **3.2 PREPARATION OF SLABS**

- 3.2.1 After concrete has been placed, strike off concrete level and flush to screeds with true straight edge.
- 3.2.2 Immediately after striking off concrete, level and consolidate with wooden darby or bull float. Complete levelling and consolidation before free moisture (bleeding) rises to surfaces.
- 3.2.3 Wait until concrete stiffens sufficiently to sustain foot pressure with only about 6 mm (1/4") indentation.
- 3.2.4 Float concrete with hand float or with power float. If free bleeding water remains on surface at this time, remove it before floating.

- 3.2.5 For concrete exposed to view, rub exposed sharp edges of concrete with carborundum to produce 3 mm radiused edges unless otherwise indicated. Refer to Structural Drawings for additional requirements.
- 3.2.6 Use mechanical stripping to remove chlorinated rubber or existing surface coatings.
- 3.2.7 Use protective clothing, eye protection, respiratory equipment during stripping of chlorinated rubber or existing surface coatings.
- 3.2.8 Power screed interior exposed floor slabs with mechanical vibratory screeding equipment. Machine float and machine trowel floor surfaces to smooth, level and dense surfaces free from trowel marks, ridges and depressions, except where specified otherwise. Refer to Structural Drawings for additional requirements.
- 3.2.9 Power screed exterior frost slabs with mechanical vibratory screeding equipment. Float using magnesium floats and trowel to level and dense surfaces and finish to sidewalk "swirl" texture.
- 3.2.10 Use hand held vibrators and hand screed, float and trowel areas where power equipment is inaccessible, to same density and surface quality specified for floors finished with power operated equipment.

### **3.3 SAWCUTTING AND FILLING OF CONTROL JOINTS AND CONSTRUCTION JOINTS**

- 3.3.1 Saw cut control joints (contraction joints) to CSA-A23.1/A23.2, 24 hours maximum after placing of concrete, and before concrete develops random contraction cracks. Do not postpone sawing operations beyond these time limitations.
- 3.3.2 Refer to Structural Drawings for joint requirements for structural work. For other requirements, provide control joints in unreinforced slabs, spaced at maximum 4.5 m on centre in square patterns.
  - 3.3.2.1 Construct control joints for a depth equal to no more than one-fourth of concrete thickness. Do not cut through reinforcement, heating systems and other embedded items.
  - 3.3.2.2 Form control joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades, minimum 3 mm wide, ensuring cutting action will not tear, abrade, or otherwise damage surface.
  - 3.3.2.3 Continuously spray water on saw blade during sawing. Grind edges of sawcuts to eliminate burrs; do not grind to bevel or chamfer joint edges.
  - 3.3.2.4 After sawing and grinding, clean joints with jet of water and blow-out with compressed air. Immediately broom clean, residue caused by sawing operation as work progresses.
  - 3.3.2.5 When cleaned joints are dry and prior to traffic being allowed over area, install temporary filler using polyethylene rope in such joints to prevent contamination.
- 3.3.3 Install joint-filler strips at junctions with slabs-on-grade and vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated on Drawings and Schedules.



- 3.3.3.1 Do not fill isolation joints, construction joints and control joints sooner than 120 Days after concrete placement. Execute joint sealing during cool, dry ambient conditions when slab is in contracted state to minimize future joint separation at sealant filled joints.
- 3.3.3.2 Ensure joints are clean and sound. Remove oil, dirt, debris, paint and other materials that may be a bond breaker. Remove temporary filler from sawcut joints. Clean joints and blow with compressed air.
- 3.3.4 Extend joint fillers full width and depth of joint, terminating flush with finished concrete surface, unless otherwise indicated on Drawings and Schedules. Overfill joints during placement. Cut flush or grind flush with floor within 24.

### 3.4 PROTECTION AND CURING

- 3.4.1 Protect concrete floor finishing from damage, soiling and contaminating substances resulting from construction activities or caused by work of other trades. Comply with CSA A23.1/A23.2 for cold-weather protection and hot-weather protection during curing.
- 3.4.2 Where soiling or spills have occurred, remove spills and soiling from adjacent surfaces using cleaning procedures recommended in writing by affected material's manufacturer. Do not use materials or process that can damage finishes, surfaces, or construction.
- 3.4.3 Promptly replace concrete floor finishing work damaged during construction that cannot be satisfactorily repaired.
- 3.4.4 Curing Methods: Cure formed and unformed concrete for at least seven days, or until minimum structural strength of concrete indicated in Structural Drawings, and as required by CSA A23.1/CSA 23.2 (Table 2) for exposure class and floor finishes specified.

### 3.5 FLOOR SURFACE TREATMENT

- 3.5.1 Apply dry shake hardener to manufacturer's written instructions on floor surfaces.
- 3.5.2 Apply sealer to manufacturer's written instructions on floor surfaces.
- 3.5.3 After floor treatment is dry, seal control joints and joints at junction with vertical surfaces with sealant.
- 3.5.4 Clean overspray. Clean sealant from adjacent surfaces.

### 3.6 TOLERANCES

- 3.6.1 Slab flatness tolerances: in accordance with CSA A23.1 (Table 22) and scheduled floor covering manufacturer's recommendations.

### 3.7 REPAIR/RESTORATION

- 3.7.1 Remove and replace concrete that does not comply with requirements in this Section.
- 3.7.2 Protect finished installation in accordance with manufacturer's instructions.

### 3.8 FIELD QUALITY CONTROL

- 3.8.1 Manufacturer Services:

- 3.8.1.1 Employ services of a trained concrete technician from staff of surface hardener manufacturer to give assistance to this Section in proper use of material during initial periods of installation.
- 3.8.2 Non-Conforming Work: Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction of Consultant at no cost to Owner.
- 3.8.3 Independent inspection and testing company may be appointed by Owner to carry out inspection and testing as directed by Consultant.
- 3.8.4 Remove defective materials and completed work which fail tests and replace as directed by Consultant.

**3.9 FLOOR FINISHING SCHEDULE**

<b>Scheduled Floor Finish</b>	<b>Concrete Finish Required</b>	<b>Hardener</b>	<b>Curing/Sealing Method*</b>
Resilient Flooring	Steel trowel	None Required	Curing/sealing compound or Water or poly curing
Trowel Applied Composition Flooring (Epoxy, Urethane Acrylic, Neoprene, Polyester):	Steel trowel in accordance with CSA A23.1.	If recommended by composition flooring material manufacturer	Poly curing
Liquid Applied Rubber or Plastic Membrane (Mechanical Waterproofing):	Steel trowel in accordance with CSA A23.1	None required	Water or poly curing
Thinset Ceramic and Quarry Tile, Clay Tile and Brick Tile	Steel trowel in accordance with CSA A23.1	None required	Water or poly curing
Ceramic and Quarry Tile, Clay Tile and Brick Tile over mortar bed	Steel trowel followed by blastrack in accordance with CSA A23.1	None required	Water or poly curing
Exposed Concrete	Steel trowel in accordance with CSA A23.1	Non-Metallic Hardener as required.	Curing/sealing compound
Interior Stairs and Ramps	Swirled	Non-Metallic Hardener as required.	Curing/sealing compound or Water or poly curing

**END OF SECTION**

## **PART 1 GENERAL**

### **1.1 GENERAL INSTRUCTIONS**

- 1.1.1 Read and conform to: The general provisions of the Contract, including General and Supplementary Conditions; and the requirements of Division 01 Specifications and any additional documents referred to in this Section.
- 1.1.2 Contractor is solely responsible for dividing the Work among Subcontractors and Suppliers. Consultant and Owner assume no responsibility to act as arbiters or to establish subcontract limits between Sections or Divisions of the Work. Any references to related work items contained in this Section are provided for convenience only

### **1.2 SUMMARY**

- 1.2.1 Provide labour, materials, Products, equipment and services to complete the metal fabrications work specified herein. This includes, but is not necessarily limited, to:
  - 1.2.1.1 Steel framing and supports for countertops, benches, vanity units and miscellaneous architectural woodwork elements.
  - 1.2.1.2 Steel tube reinforcement for low partitions.
  - 1.2.1.3 Steel framing and supports for mechanical and electrical equipment.
  - 1.2.1.4 Steel framing and supports for applications where framing and supports are not specified in other Sections.
  - 1.2.1.5 Miscellaneous steel trim including steel angle corner guards, steel edgings and where shown on Drawings.
  - 1.2.1.6 Steel framing and supports for washroom and shower accessories supporting downward loads, including grab bars and change tables.
  - 1.2.1.7 Steel framing and supports for fire valve cabinets.
  - 1.2.1.8 Steel framing and supports for large mirrors.
  - 1.2.1.9 Miscellaneous sections and framing as required to complete the Work and as indicated in the Canadian Institute for Steel Construction (CISC) - Handbook of Steel Construction "Appendix F" for applications where framing and supports are not explicitly specified in this section.
  - 1.2.1.10 Auxiliary materials required for a complete installation.
- 1.2.2 Related Requirements: Specifications throughout all Divisions of the Project shall be read as a whole, and may be directly applicable to this Section.

### **1.3 REFERENCES**

- 1.3.1 Reference Standards: Unless otherwise indicated in this Section or the Building Code, the latest published editions of reference standards as of the Project's Bid Closing deadline apply. Refer to 01 42 19 - Reference Standards.

## 1.4 DEFINITIONS

1.4.1 Workmanship (as defined by AMP 555 – Draft Edition) for this Section must be in accordance with one of the following classes:

1.4.1.1 Class 1:

- .1 Exposed surfaces are finished smooth with pits, mill marks, nicks and scratches filled or ground off. Defects are not apparent when painted or polished.
- .2 Welds are concealed where possible. Exposed welds are ground to small radius with uniform sized coves unless indicated otherwise.
- .3 Distortions are not visible to the naked eyes.
- .4 Exposed joints are fitted to a hairline finish.

1.4.1.2 Class 2:

- .1 Exposed surfaces retain mill marks and moderate irregularities, but are generally not visible to the naked eye when viewed at 10 m (30 ft)
- .2 Exposed welds are ground to a uniform sized cove.
- .3 Exposed joints are fitted to a maximum gap of 1.6 mm (1/16 inch)

1.4.1.3 Class 3:

- .1 Exposed surfaces have no improvement from mill finish except preparation necessary for galvanizing, or priming.
- .2 Exposed welds are not ground.
- .3 Bolt, when used, may be exposed.

## 1.5 COORDINATION

1.5.1 Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written instructions to ensure that shop primers and topcoats are compatible with one another.

1.5.2 Coordinate installation of metal fabrications that are anchored to or that receive other work. Supply setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

## 1.6 PREINSTALLATION MEETINGS

1.6.1 Project Meetings, generally: in accordance with Section 01 31 00 Project Management and Coordination. Pre-installation Meetings: Schedule and hold a pre-installation meeting at the Project site at least one week before beginning work on this Section to coordinate activities with related Subcontractors.

1.6.1.1 Required Attendance: Subcontractor performing work of this Section, representatives from manufacturers and fabricators involved in or affected by installation.

1.6.1.2 Notification: Notify Consultant and Owner of scheduled meeting dates in advance; minimum 72 hour notice required.

- 1.6.1.3 Agenda:
  - .1 Review progress of related construction activities and preparations for particular activity under consideration.
  - .2 Make note of required sequencing and coordination with materials and activities that have preceded or will follow.
- 1.6.1.4 Reporting: Record significant discussions, agreements, and disagreements, including required corrective measures and actions.
- 1.6.1.5 Distribution: Distribute minutes of the meeting to each party present and to other parties requiring information not more than 72 hours after meeting.

## 1.7 SUBMITTALS

- 1.7.1 Submittals, generally: in accordance with Section 01 33 00, Submittal Procedures.
- 1.7.2 Product Data: Submit manufacturer's product characteristics, catalogue cuts, installation instructions and other relevant information for each material and product used for metal fabrications work specified in this Section.
- 1.7.3 Shop Drawings: Submit Shop Drawings indicating material layouts, details of construction, connections, and relationship with adjacent construction. As a minimum indicate following:
  - 1.7.3.1 Include plans, elevations, sections and details as applicable.
  - 1.7.3.2 Indicate field-measured dimensions on Shop Drawings.
  - 1.7.3.3 Member sizes, locations, thickness (exclusive of coatings), metallic coatings and mechanical properties,
  - 1.7.3.4 Connection details for attaching framing to itself and to the structure,
  - 1.7.3.5 Dimensions, requirements of related work, and critical installation procedures,
  - 1.7.3.6 Temporary bracing required for erection purposes,
  - 1.7.3.7 Design loads,
  - 1.7.3.8 Welds indicated by welding symbols as defined in CSA-W59.
- 1.7.4 Delegated Design Submittals:
  - 1.7.4.1 Engineering design completion of metal fabrications work is delegated to Contractor based on structural design criteria indicated in Contract Documents.
  - 1.7.4.2 Submit Shop Drawings for work of this Section that bear the stamp of a Professional Engineer registered in Province of Ontario.
  - 1.7.4.3 Submit copy of structural calculations upon request by Consultant.
- 1.7.5 Embodied Carbon / Environmental Product Declarations (EPDs): When available, submit product-specific or industry-wide EPDs conforming to ISO 14025 or other recognized environmental Product declaration framework meeting following criteria:
  - 1.7.5.1 EPD Scope: Must cover Cradle-to-Gate (A1 to A3) as a minimum.

- 1.7.5.2 EPD Impact Categories: Must report Global Warming Potential (GWP) in form of unit of kgCO<sub>2</sub>e/declared unit as a minimum.
- 1.7.5.3 Product Options: Give preference to Products with compliant documentation when choice is at Contractor's option.
- 1.7.6 Material Ingredient Disclosure: When available, submit documentation disclosing chemical inventory of materials to at least 0.1% (1000ppm) meeting following criteria:
  - 1.7.6.1 Standard: Health Product Declaration (HPD) Open Standard, Cradle to Cradle v2 (Basic level) or Cradle to Cradle v3 (Bronze level), International Living Future Institute (ILFI) Declare, or other approved material ingredient declaration framework.
  - 1.7.6.2 Product Options: Give preference to Products with compliant documentation when choice is at Contractor's option.
- 1.7.7 Welding Certificate: Submit certification for welding firms and welders to verify compliance with welding qualifications specified in this section.

## 1.8 CLOSEOUT SUBMITTALS

- 1.8.1 Closeout Submittals, generally: in accordance with Section 01 78 00, Closeout Submittals.
- 1.8.2 Operating and Maintenance Data: Submit care and maintenance instructions for metal fabrications to be included in building operation and maintenance manual.
- 1.8.3 Warranty Documentation: Submit copy of extended warranties specified in this Section.

## 1.9 QUALITY ASSURANCE

- 1.9.1 Manufacturer Qualifications: Provide Products for work of this Section by manufacturer with at least 5 years' experience manufacturing such materials.
- 1.9.2 Installer Qualifications: Engage an entity with at least five years' experience installing, erecting, or assembling work similar in material, design, and extent to that shown on Drawings and Schedules, and whose work has resulted in construction with a track record of successful in-service performance.
- 1.9.3 Welding Qualifications: Qualify procedures and personnel in accordance with the following:
  - 1.9.3.1 Steel: to CSA W47.1 and CSA W59
  - 1.9.3.2 Aluminum: to CSA W47.2 and CSA W59.2
  - 1.9.3.3 Stainless Steel: to CSA W47.1 (Annex K) and CSA W59.
- 1.9.4 Professional Engineer's Qualifications: Employ Professional Engineer licensed to practice in Province of Ontario who carries professional liability insurance and has at least five years' experience providing engineering services of similar kind, scope, and complexity.
  - 1.9.4.1 Professional Engineer's Responsibility:
    - .1 production and review of Shop Drawings,

- .2 design and certification of metal fabrications, including attachments for building construction, in accordance with applicable codes and regulations,
  - .3 stamping and signing of each Shop Drawing and associated calculations
- 1.9.5 Single Source Responsibility: Obtain primary materials for this Section from a single source by a single manufacturer, and secondary materials from sources recommended by manufacturers of primary materials.

## 1.10 DELIVERY, STORAGE AND HANDLING

- 1.10.1 Product Requirements, generally: in accordance with Section 01 61 00, Common Product Requirements.
- 1.10.2 Deliver, store and handle metal fabrications materials in accordance with manufacturer's written instructions.
- 1.10.3 Deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- 1.10.4 Store materials in off-ground, in clean, dry, well-ventilated area.
- 1.10.5 Replace defective or damaged materials with new.

## 1.11 FIELD CONDITIONS

- 1.11.1 Environmental Restrictions: Do not deliver or install metal fabrications until building is enclosed, wet work is complete, and HVAC system is operational and will maintain temperature and relative humidity levels equal to occupancy levels for remainder of construction period.
- 1.11.2 Field Measurements: Verify actual dimensions of construction contiguous with metal fabrications by field measurements before fabrication.

## PART 2 PRODUCTS

### 2.1 PERFORMANCE / DESIGN CRITERIA

- 2.1.1 Delegated Design: Employ a qualified professional engineer, as specified in this Section, to design elements of this section requiring structural performance and based on the following:
  - 2.1.1.1 Steel Elements: to CSA S16, unless indicated otherwise.
  - 2.1.1.2 Cold-Formed Steel: to CSA S136.
  - 2.1.1.3 Aluminum: to CSA S157/S157.1
  - 2.1.1.4 Where components specified in this Section will be subject to upward or downward pull by human interaction (e.g. supports for grab bars, shower seats, etc.) provide elements capable of withstanding the following loads under conditions indicated:
    - .1 Minimum load ratings: 1.3 kN (292 lb-f)
    - .2 Maximum Deflection between supports: L/144 or 3 mm (1/8") whichever is less.

- 2.1.2 Metal Surfaces - Appearance:
  - 2.1.2.1 Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.
    - .1 Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.
  - 2.1.2.2 Provide metal fabrications complying with the following classes as defined in this Section:
    - .1 Class 1 Workmanship: Items that are exposed to view in finished spaces in completed Work.
    - .2 Class 2 Workmanship: Items that are exposed to view in utility areas of the completed Work.
    - .3 Class 3 Workmanship: Items that are concealed from view in the completed Work
- 2.1.3 Exterior Metal Fabrications: fabricate and install to prevent buckling, opening up of joints and overstressing of welds and fasteners under the following temperature conditions:
  - 2.1.3.1 Temperature Change: ambient temperature cycling of - 30 deg C (-22 deg F) to 82 deg C (180 deg F) over a 12 hour period.

## 2.2 FERROUS METALS

- 2.2.1 Steel Plates, Shapes, and Bars: CSA G40.20/G40.21, Grade 350W or equivalent to ASTM A36/A36M
- 2.2.2 Rolled-Steel Floor Plate: ASTM A786/A786M, rolled from plate complying with ASTM A36/A36M or CSA G40.20/G40.21 or ASTM A283/A283M, Grade C or D.
- 2.2.3 Rolled-Stainless Steel Floor Plate: ASTM A793.
- 2.2.4 Steel Tubing: ASTM A500/A500M, cold-formed steel tubing.
- 2.2.5 Steel Pipe: ASTM A53/A53M, Standard Weight Schedule 40 unless otherwise indicated.
- 2.2.6 Slotted Channel Framing (Unistrut): Cold-formed metal box channels struts complying with MFMA-4.
  - 2.2.6.1 Size of Channels: As indicated on reviewed Shop Drawings.
  - 2.2.6.2 Material: Galvanized steel, ASTM A653/A653M, structural steel, Grade 230 (Grade 33), with Z275 (G90) coating; minimum 2-mm (0.079-in.) nominal thickness.

## 2.3 NON-FERROUS METALS

- 2.3.1 Aluminum Plate and Sheet: ASTM B209M (ASTM B209), Alloy 6061-T6.
- 2.3.2 Aluminum Extrusions: ASTM B221M (ASTM B221), Alloy 6063-T6.
- 2.3.3 Aluminum-Alloy Rolled Tread Plate: ASTM B632/B632M, Alloy 6061-T6.
- 2.3.4 Aluminum Castings: ASTM B26/B26M, Alloy 443.0-F.



- 2.3.5 Stainless Steel Sheet, Strip, and Plate: ASTM A240/A240M or ASTM A666, Type 304 for interior and Type 316L for exterior.
- 2.3.6 Stainless Steel Bars and Shapes: ASTM A276/A276M, Type 304 for interior and Type 316L for exterior.

## 2.4 FASTENERS

- 2.4.1 General Requirements: Unless otherwise indicated, provide stainless steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.
- 2.4.2 Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM F568M, Property Class 4.6 (ASTM A307, Grade A); with hex nuts, ASTM A563M (ASTM A563); and, where indicated, flat washers.
- 2.4.3 Stainless Steel Bolts and Nuts: Regular hexagon-head annealed stainless steel bolts, ASTM F738M (ASTM F593); with hex nuts, ASTM F836M (ASTM F594); and, where indicated, flat washers; Alloy Group A1 (1) .
- 2.4.4 Anchor Bolts: ASTM F1554, Grade 36, of dimensions indicated; with nuts, ASTM A563M (ASTM A563); and, where indicated, flat washers.
  - 2.4.4.1 Hot-dip galvanize or provide mechanically deposited, zinc coating where item being fastened is indicated to be galvanized.
- 2.4.5 Anchors - General Requirements: Capable of sustaining, without failure, loads imposed with appropriate safety factors, as determined by testing in accordance with ASTM E488/E488M, conducted by a qualified independent testing agency.

## 2.5 AUXILIARY INSTALLATION MATERIALS

- 2.5.1 Welding materials: to CSA W59.
- 2.5.2 Welding electrodes: to CSA W48 Series.
- 2.5.3 Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with CISC/ CPMA Standards 1-73a and 2-75 and MPI#79 and compatible with topcoat.
  - 2.5.3.1 Use primer containing pigments that make it easily distinguishable from zinc-rich primer.
- 2.5.4 Epoxy Zinc-Rich Primer: Complying with MPI#20 and compatible with topcoat.
- 2.5.5 Galvanizing Repair Paint: High-zinc-dust-content paint (not less than 93 percent) complying with SSPC-Paint 20 and compatible with paints specified to be used over it.
- 2.5.6 Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.
- 2.5.7 Shrinkage-Resistant Grout: Factory-packaged, nonmetallic, nonstaining, noncorrosive, nongaseous grout complying with ASTM C1107/C1107M with compressive strength of 15 MPa at 24 hours. Provide grout specifically recommended by manufacturer for interior and exterior applications.
  - 2.5.7.1 Acceptable Product: 'Sika Grout 212' by Sika Canada Inc., or approved equivalent.

2.5.8 Concrete: Refer to Structural Drawings

## 2.6 FABRICATION - GENERAL REQUIREMENTS

- 2.6.1 Fabricate work square, true, straight, and accurate to required size, with joints closely fitted and properly secured.
- 2.6.2 Weld connections unless indicated otherwise.
- 2.6.3 Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
- 2.6.4 Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1 mm (1/32 in.) unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- 2.6.5 Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- 2.6.6 Form exposed work with accurate angles and surfaces and straight edges.
- 2.6.7 Weld corners and seams continuously to comply with the following:
  - 2.6.7.1 Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  - 2.6.7.2 Obtain fusion without undercut or overlap.
  - 2.6.7.3 Remove welding flux immediately.
  - 2.6.7.4 At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- 2.6.8 Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use Phillips flat-head countersunk fasteners unless otherwise indicated. Locate joints where least conspicuous.
- 2.6.9 Fabricate seams and other connections that are exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.
- 2.6.10 Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.
- 2.6.11 Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.
- 2.6.12 Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors, 3.2 by 38 mm (1/8 by 1-1/2 in.), with a minimum 150-mm (6-in.) embedment and 50-mm (2-in.) hook, minimum 200 mm (8 in.) from ends and corners of units and 600 mm (24 in.) o.c., unless otherwise indicated.
- 2.6.13 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 evenly spaced and neatly laid out. Make fastenings of permanent type unless otherwise indicated.

## 2.7 GENERAL FINISH REQUIREMENTS

- 2.7.1 Finish metal fabrications after assembly.
- 2.7.2 Finish exposed surfaces to remove tool and die marks and stretch lines, and to blend into surrounding surface.
- 2.7.3 Galvanize miscellaneous framing and supports at exterior locations; prime paint miscellaneous framing and supports at interior locations.

## 2.8 STEEL AND IRON FINISHES

- 2.8.1 Galvanizing: Hot-dip galvanize items to comply with ASTM A153/A153M for steel and iron hardware and with ASTM A 123/A 123M or equivalent to CAN/CSA-G164 for other steel and iron products.
  - 2.8.1.1 Do not quench or apply post-galvanizing treatments that might interfere with paint adhesion.
  - 2.8.1.2 Preparation for Shop Priming of Galvanized Items: After galvanizing, thoroughly clean galvanized surfaces of grease, dirt, oil, flux, and other foreign matter, and treat with metallic phosphate process.
- 2.8.2 Preparation for Shop Priming: Prepare surfaces to comply with requirements indicated below:
  - 2.8.2.1 Exterior Items: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
  - 2.8.2.2 Items Indicated to receive Zinc-Rich Primer: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
  - 2.8.2.3 Other Steel Items: SSPC-SP 3, "Power Tool Cleaning."
  - 2.8.2.4 Galvanized-Steel Items: SSPC-SP 16, "Brush-off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-Ferrous Metals."
- 2.8.3 Shop Priming:
  - 2.8.3.1 Shop prime items not indicated to be galvanized unless they are to be embedded in concrete, sprayed-on fireproofing, or masonry, or unless otherwise indicated. Shop prime with universal shop primer unless indicated otherwise.
  - 2.8.3.2 Apply shop primer to comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.
  - 2.8.3.3 Stripe paint corners, crevices, bolts, welds, and sharp edges.

## 2.9 ALUMINUM FINISHES

- 2.9.1 As-Fabricated Finish: AA-M12.
- 2.9.2 Clear Anodic Finish: AAMA 611, Class I, AA-M12C22A41.

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## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- 3.1.1 Verify actual site conditions and location of adjacent materials prior to commencing work. Notify Consultant in writing of any conditions which would be detrimental to the installation. Commencement of work implies acceptance of previously completed work.

### **3.2 INSTALLATION**

- 3.2.1 Installation, generally: Install work of this Section in strict accordance with manufacturer's written installation instructions and reviewed Shop Drawings. Supplement manufacturer's installation instructions with additional installation requirements specified in this Section to produce specified work results.
- 3.2.2 Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
- 3.2.3 Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations.
- 3.2.4 Field Welding: Comply with CSA W59 and the following requirements:
- 3.2.4.1 Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  - 3.2.4.2 Obtain fusion without undercut or overlap.
  - 3.2.4.3 Remove welding flux immediately.
  - 3.2.4.4 At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- 3.2.5 Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag screws, and other connectors.
- 3.2.6 Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.
- 3.2.7 Corrosion Protection / Isolation Coating: Isolate aluminum from following components, by means of bituminous paint:
- 3.2.7.1 Dissimilar metals except stainless steel, zinc, or white bronze of small area.
  - 3.2.7.2 Concrete, mortar and masonry.
  - 3.2.7.3 Wood.
- 3.2.8 Provide separator membrane/mastic between steel and substrates of concrete, masonry, or dissimilar metals.

### 3.3 INSTALLATION OF MISCELLANEOUS FRAMING AND SUPPORTS

- 3.3.1 General Requirements: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.
- 3.3.2 Anchor supports securely to, and rigidly brace from, building structure.

### 3.4 REPAIRS

- 3.4.1 Touchup Painting:
  - 3.4.1.1 Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
    - .1 Apply by brush or spray to provide a minimum 0.05-mm (2.0-mil) dry film thickness.
- 3.4.2 Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A780/A780M.

### 3.5 METAL FABRICATION SCHEDULE

- 3.5.1 Provide steel framing and supports not specified in other Sections as needed to complete the Work.
- 3.5.2 Where items are required to be built into masonry, concrete or other work, supply such items to respective Sections with required anchors and accessories for building in.
- 3.5.3 Following Schedule is a list of principal items only and is not necessarily exhaustive. Review Drawings and other Specifications, including those pertaining to structural, mechanical, and electrical work, to determine full scope of metal fabrications required for this Project.
- 3.5.4 STEEL FRAMING AND SUPPORTS FOR GLASS DOORS, ENTRANCE AND PARTITIONS
  - 3.5.4.1 Fabricate and install partition framing such that, when installed, it is capable of supporting required deadloads and withstanding live loads imposed on it from operation of the partitions.
- 3.5.5 MISCELLANEOUS STEEL TRIM
  - 3.5.5.1 Fabricate units from steel shapes, plates, and bars of profiles shown with continuously welded joints and smooth exposed edges. Miter corners and use concealed field splices where possible.
  - 3.5.5.2 Provide cutouts, fittings, and anchorages as needed to coordinate assembly and installation with other work.
  - 3.5.5.3 Provide with integrally welded steel strap anchors for embedding in concrete or masonry construction.
  - 3.5.5.4 Galvanize exterior miscellaneous steel trim.
  - 3.5.5.5 Prime paint interior miscellaneous steel trim.
  - 3.5.5.6 Surface Applied Corner Guards (Back-of-House): Provide corner guards fabricated from angles of sizes shown, or if not shown, of

minimum 114 mm x 114 mm x 6 mm (4-1/2 in x 4-1/2 in x 6 mm) thick equal leg angles. Drill and countersink legs of angles, for fastening to substrates indicated, with holes spaced maximum 600 mm (24 in) on center. Provide corner guard lengths minimum 1200 mm (48 in) above finished floor level, if not otherwise indicated.

3.5.6 STEEL WELD PLATES AND ANGLES

3.5.6.1 Provide steel weld plates and angles not specified in other Sections, for items supported from concrete construction as needed to complete the Work. Provide each unit with no fewer than two integrally welded steel strap anchors for embedding in concrete.

3.5.7 MISCELLANEOUS FRAMING AND SUPPORTS

3.5.7.1 Fabricate units from steel shapes, plates, and bars of welded construction unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction.

.1 Fabricate units from slotted channel framing where indicated.

.2 Supply inserts for units installed after concrete is placed.

3.5.8 COUNTERTOPS, AND MISCELLANEOUS ARCHITECTURAL WOODWORK FRAMING

3.5.8.1 Custom-fabricate countertop, vanity framing, using steel shapes and plates for support framing, to thicknesses, sizes and shapes required to produce work of adequate strength and durability, without objectionable deflections.

3.5.8.2 Use proven details of fabrication, as required, to achieve proper assembly and alignment of the various components of the work.

**END OF SECTION**

## **PART 1 GENERAL**

### **1.1 GENERAL INSTRUCTIONS**

- 1.1.1 Read and conform to: The general provisions of the Contract, including General and Supplementary Conditions; and the requirements of Division 01 Specifications and any additional documents referred to in this Section.
- 1.1.2 Contractor is solely responsible for dividing the Work among Subcontractors and Suppliers. Consultant and Owner assume no responsibility to act as arbiters or to establish subcontract limits between Sections or Divisions of the Work. Any references to related work items contained in this Section are provided for convenience only.

### **1.2 SUMMARY**

- 1.2.1 Provide labour, materials, products, equipment and services to complete the rough carpentry work specified herein. This includes, but is not necessarily limited, to:
  - 1.2.1.1 Miscellaneous furring and blocking,
  - 1.2.1.2 Electrical and equipment mounting panels.
  - 1.2.1.3 Rough blocking in walls for support of wall-mounted items.
- 1.2.2 Related Requirements: Specifications throughout all Divisions of the Project shall be read as a whole, and may be directly applicable to this Section.

### **1.3 REFERENCES**

- 1.3.1 Reference Standards: Unless otherwise indicated in this Section or the Building Code, the latest published editions of reference standards as of the Project's Bid Closing deadline apply.

### **1.4 PREINSTALLATION MEETINGS**

- 1.4.1 Project Meetings, generally: in accordance with Section 01 31 00 Project Management and Coordination
- 1.4.2 Pre-installation Meetings: Schedule and hold a pre-installation meeting at the Project site at least one week before beginning work on this Section to coordinate activities with related Subcontractors.
  - 1.4.2.1 Required Attendance: Subcontractor performing work of this Section, representatives from manufacturers and fabricators involved in or affected by installation.
  - 1.4.2.2 Notification: Notify Consultant and Owner of scheduled meeting dates in advance; minimum 72 hour notice required.
  - 1.4.2.3 Agenda:
    - .1 Review progress of related construction activities and preparations for particular activity under consideration.
    - .2 Make note of required sequencing and coordination with materials and activities that have preceded or will follow.

- 1.4.2.4 Reporting: Record significant discussions, agreements, and disagreements, including required corrective measures and actions.
- 1.4.2.5 Distribution: Distribute minutes of the meeting to each party present and to other parties requiring information not more than 72 hours after meeting.

## 1.5 SUBMITTALS

- 1.5.1 Submittals, generally: in accordance with Section 01 33 00, Submittal Procedures.
- 1.5.2 Product Data:
  - 1.5.2.1 Where fire-retardant-treated carpentry is used, submit data for fire-retardant treatment from chemical treatment manufacturer, as well as certification from treating plant, that the treated materials meet requirements specified in this Section.
  - 1.5.2.2 Include data on physical properties of treated materials based on independent testing by a qualified testing agency.
- 1.5.3 Embodied Carbon / Environmental Product Declarations (EPDs): When available, submit product-specific or industry-wide EPDs conforming to ISO 14025 or other recognized environmental Product declaration framework meeting following criteria:
  - 1.5.3.1 EPD Scope: Must cover Cradle-to-Gate (A1 to A3) as a minimum.
  - 1.5.3.2 EPD Impact Categories: Must report Global Warming Potential (GWP) in form of unit of kgCO<sub>2</sub>e/declared unit as a minimum.
  - 1.5.3.3 Product Options: Give preference to Products with compliant documentation when choice is at Contractor's option.
- 1.5.4 Material Ingredient Disclosure: When available, submit documentation disclosing chemical inventory of materials to at least 0.1% (1000ppm) meeting following criteria:
  - 1.5.4.1 Standard: Health Product Declaration (HPD) Open Standard, Cradle to Cradle v2 (Basic level) or Cradle to Cradle v3 (Bronze level), International Living Future Institute (ILFI) Declare, or other approved material ingredient declaration framework.
  - 1.5.4.2 Product Options: Give preference to Products with compliant documentation when choice is at Contractor's option.
- 1.5.5 Low-Emitting Materials: For applicable Products specified or used for activities of this Section (i.e., site-applied coatings, adhesives, and sealants), submit certifications from third-party organizations indicating compliance with following:
  - 1.5.5.1 VOC Emissions: California Department of Public Health (CDPH) Standard Method v1.2–2017, using applicable exposure scenario.
  - 1.5.5.2 VOC Content: SCAQMD Rule 1113 (for paints and coatings) and SCAQMD Rule 1168 (for adhesives and sealants).

## 1.6 DELIVERY, STORAGE AND HANDLING

- 1.6.1 Product Requirements, generally: in accordance with Section 01 61 00, Common Product Requirements.



- 1.6.2 Stack lumber flat with spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.
- 1.6.3 Deliver interior wood materials that are to be exposed to view only after building is enclosed and weatherproof, wet work other than painting is dry, and HVAC system is operating and maintaining temperature and humidity at occupancy levels.

## **PART 2 PRODUCTS**

### **2.1 REGULATORY REQUIREMENTS**

- 2.1.1 Lumber identification: by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board conforming to the Standard Grading Rules for Canadian Lumber published by the National Lumber Grades Authority.
- 2.1.2 Plywood and wood-based composite panel construction identification: by grade mark in accordance with applicable CSA standards. Ensure plywood grading agency is certified by APA The Engineered Wood Association; <http://www.apawood.org>
- 2.1.3 Preservative Pressure-Treated and Fire-Retardant-Treated Wood and Plywood identification: by grade mark in accordance with the Canadian Wood Preservers Bureau and applicable ULC standards acceptable to authorities having jurisdiction.
- 2.1.4 Identify lumber by grade stamp of an agency certified by Canadian Lumber Standards Administration Board

### **2.2 PERFORMANCE / DESIGN CRITERIA**

- 2.2.1 Visual Characteristics: Measure knots, checks, shakes and slope of grain in visually graded lumber in accordance with ASTM D245 with exceptions as noted under NLGA 120d.
- 2.2.2 Use chemical formulations that do not require incising, contain colorants, bleed through, or otherwise adversely affect finishes when preservative or fire-retardant treatment is required for exposed items designated to receive a stained or natural finish.
- 2.2.3 Maximum moisture content for materials specified in this Section: 19%.
- 2.2.4 Do not use materials that are warped or do not comply with requirements specified herein.
- 2.2.5 VOC Content and Emissions:
  - 2.2.5.1 VOC Emissions: For applicable items in this Section, comply with CDPH Standard Method v1.2–2017 (CA Spec 01350) and ensure products are certified per UL 2818, SCS Global Gold, or equivalent.
  - 2.2.5.2 VOC Content Requirements: Wet-applied materials used in scope of this Section must conform to the following:
    - .1 Paints and Coatings: SCAQMD Rule 1113 or CARB SCM.
    - .2 Adhesives and Sealants: SCAQMD Rule 1168.

- .3 Methylene chloride and perchloroethylene must not be intentionally added in paints, coatings, adhesives, or sealants.
- 2.2.5.3 Composite Wood (if applicable): must be ULEF or NAF type per CARB ATCM. Do not adhesives that contain urea-formaldehyde.

## 2.3 LUMBER MATERIALS

- 2.3.1 Standard Lumber: to CSA O141, No. 2 White Pine, No. 2 Red Pine, or No. 1 Construction S-P-F, lumber with moisture content of 19% or less, kiln-dried, free from sap, shakes, splits, knots and other defects for furring, blocking, nailing strips, grounds, rough bucks, cants, backing and sleepers as applicable.
- 2.3.2 Surfacing: minimum S2S (surfaced 2 sides) in concealed locations; minimum S4S (surfaced 4 sides) in exposed locations.
- 2.3.3 Board sizes: "Standard" or better grade.
- 2.3.4 Dimension sizes: "Standard" light framing or better grade.
- 2.3.5 Consultant reserves the right to select species and appearance grades to suit design requirements.

## 2.4 PANEL MATERIALS

- 2.4.1 Plywood: Following types are acceptable unless indicated otherwise:
  - 2.4.1.1 Douglas Fir Plywood (DFP): to CSA-O121, G2S, standard construction, minimum 19 mm (3/4 inch) thickness unless indicated otherwise on Drawings.
  - 2.4.1.2 Canadian Softwood Plywood (CSP): to CSA-O151 G2S, standard construction, minimum 19 mm (3/4 inch) thickness unless indicated otherwise on Drawings.

## 2.5 FIRE-RETARDANT-TREATED WOOD AND PLYWOOD

- 2.5.1 Treatment: Provide chemical treatment acceptable to authorities having jurisdiction and containing no arsenic or chromium from one of the following manufacturers:
  - 2.5.1.1 Dircon; [www.dricon.com](http://www.dricon.com)
  - 2.5.1.2 FireFree; [www.firefree.com](http://www.firefree.com)
  - 2.5.1.3 Approved equivalent.
- 2.5.2 Surface Burning Characteristics: flame spread rating of 25 or less in accordance with CAN/ULC-S102.
  - 2.5.2.1 Do not damage or otherwise affect ULC Label.
- 2.5.3 Application: Provide fire-retardant-treatment for following wood elements and other items indicated on Drawings to receive treatment:
  - 2.5.3.1 Concealed blocking.
  - 2.5.3.2 Plywood backing panels.

## 2.6 ACCESSORIES

- 2.6.1 Supply rough hardware to frame and fix rough carpentry including but not limited to bolts, anchors, nails, expansion shields and other fastenings required.

- 2.6.2 Wire Nails, Spikes and Staples: Conforming to CSA B111.
- 2.6.3 Provide spiral thread nails except as indicated otherwise.
- 2.6.4 Bolts: ASTM A307, minimum 12 mm (½") complete with nuts and washers.
- 2.6.5 Proprietary fasteners (toggle bolts, expansion shields, screws, organic fibre plugs etc.): recommended for purpose by manufacturers.

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- 3.1.1 Verify actual site conditions and location of adjacent materials prior to commencing work. Notify Consultant in writing of any conditions which would be detrimental to the installation. Commencement of work implies acceptance of previously completed work.

### **3.2 PREPARATION**

- 3.2.1 Treat surfaces with wood preservative or fire retardant treatments before installation.
- 3.2.2 Use dust collectors and high quality respirator masks when cutting or sanding wood panels.
- 3.2.3 Apply preservative by dipping or by brush to completely saturate and maintain wet film on surface for minimum 3-minute soak on lumber and 1-minute soak for plywood.
- 3.2.4 After cutting, drilling and fitting of fire-retardant treated or preservative-treated wood and plywood but before installation, apply 1 full coat of wood preservative to exposed surfaces, including ends of blocking, furring, nailers and rough carpentry. Retreat surfaces exposed by cutting, trimming or boring with liberal brush application of preservative or fire retardant before application.
- 3.2.5 Coordinate with other Sections providing blocking, nailing strips and trims as required for installation of The Work.

### **3.3 INSTALLATION**

- 3.3.1 Comply with requirements indicated in OBC, Section 9.23 as supplemented by requirements specified in this Section.
- 3.3.2 Properly frame together parts of the work with members accurately cut to size, closely fitted, well spiked, and erected in a substantial manner, plumb, level, square and true to dimension.
- 3.3.3 Locate joints over bearing or supporting surfaces.
- 3.3.4 Provide running members full length wherever possible.
- 3.3.5 Design for expansion and contraction of the materials.
- 3.3.6 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.

- 3.3.7 Provide fasteners and rough hardware for a rigid and secure installation. In addition to mechanical fasteners, place continuous adhesive bead where appropriate in accordance with manufacturer's instructions.
- 3.3.8 Countersink bolts where necessary to provide clearance for other work.
- 3.3.9 Select exposed framing for appearance. Install lumber and panel materials so that grade-marks and other defacing marks are concealed or are removed by sanding where materials are left exposed.
- 3.3.10 Provide plywood, blocking, furring, nailers, rough carpentry, grounds and nailing strips, as required for proper installation and to support miscellaneous work indicated on Drawings to meet design requirements.

### **3.4 PLYWOOD BACKING PANELS**

- 3.4.1 Install wood panels required for mechanical, electrical and communication trades for mounting of items including but not limited to control boards, panel boards, pull boxes, splitters, switches, wall-mounted switch gear, junction boxes, electrical cabinets, data control equipment, disconnect switches, fire alarm control equipment, lighting control equipment, sound/communication equipment and other similar devices.
- 3.4.2 Provide plywood backboard panels in one piece screw-fastened and securely mounted to wall surfaces by use of fire-retardant-treated wood strapping.
- 3.4.3 Ensure panel size and mounting height suit mechanical and electrical requirements and are acceptable to respective Consultants. Apply to all surfaces and edges of plywood panels1 coat of fire-retardant wood preservative to surfaces and edges of plywood panels.

### **3.5 PROTECTION**

- 3.5.1 Protect installed products and components from damage during construction.
- 3.5.2 Repair damage to adjacent materials caused by rough carpentry installation.

### **3.6 CLEANING AND WASTE MANAGEMENT**

- 3.6.1 Cleaning and Waste Management, generally: in accordance with Section 01 74 00, Cleaning and Waste Management.
- 3.6.2 Cleaning: Maintain clean construction area at the end of each day. When activities of this Section are complete, remove materials, tools, equipment and rubbish.
- 3.6.3 Waste Management and Disposal: sort waste for reuse, recycling, or disposal, as specified. Remove recycling bins and containers from site and dispose of contents at the appropriate waste disposal facilities.

**END OF SECTION**

## **PART 1 GENERAL**

### **1.1 GENERAL INSTRUCTIONS**

- 1.1.1 Read and conform to: The general provisions of the Contract, including General and Supplementary Conditions; and the requirements of Division 01 Specifications and any additional documents referred to in this Section.
- 1.1.2 Contractor is solely responsible for dividing the Work among Subcontractors and Suppliers. Consultant and Owner assume no responsibility to act as arbiters or to establish subcontract limits between Sections or Divisions of the Work. Any references to related work items contained in this Section are provided for convenience only

### **1.2 SUMMARY**

- 1.2.1 Provide labour, materials, Products, equipment and services to complete the architectural woodwork work specified herein. This includes, but is not necessarily limited, to:
  - 1.2.1.1 Casework and associated hardware.
  - 1.2.1.2 Interior wood window frames
  - 1.2.1.3 Auxiliary materials required for a complete installation.
- 1.2.2 Related Requirements: Specifications throughout all Divisions of the Project shall be read as a whole, and may be directly applicable to this Section.

### **1.3 REFERENCES**

- 1.3.1 Reference Standards: Unless otherwise indicated in this Section or the Building Code, the latest published editions of reference standards as of the Project's Bid Closing deadline apply.

### **1.4 PREINSTALLATION MEETINGS**

- 1.4.1 Project Meetings, generally: in accordance with Section 01 31 00, Project Management and Coordination.
- 1.4.2 Pre-installation Meetings: Schedule and hold a pre-installation meeting at the Project site at least one week before beginning work on this Section to coordinate activities with related Subcontractors.
  - 1.4.2.1 Required Attendance: Subcontractor performing work of this Section, representatives from manufacturers and fabricators involved in or affected by installation.
  - 1.4.2.2 Notification: Notify Consultant and Owner of scheduled meeting dates in advance; minimum 72 hour notice required.
  - 1.4.2.3 Agenda:
    - .1 Review progress of related construction activities and preparations for particular activity under consideration.
    - .2 Make note of required sequencing and coordination with materials and activities that have preceded or will follow.

- 1.4.2.4 Reporting: Record significant discussions, agreements, and disagreements, including required corrective measures and actions.
- 1.4.2.5 Distribution: Distribute minutes of the meeting to each party present and to other parties requiring information not more than 72 hours after meeting.

## 1.5 ADMINISTRATIVE REQUIREMENTS

### 1.5.1 Coordination:

- 1.5.1.1 Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that architectural woodwork and related items can be supported and installed as indicated.
- 1.5.1.2 Perform pre-wiring and partial mounting of electrical and audio/visual equipment and concealed wiring required. Finalize location of outlets and similar items with Consultant prior to installation.
- 1.5.1.3 Where woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings.
- 1.5.1.4 Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- 1.5.1.5 Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being enclosed, and indicate measurements on Shop Drawings.

## 1.6 SUBMITTALS

- 1.6.1 Submittals, generally: in accordance with Section 01 33 00, Submittal Procedures.
- 1.6.2 Product Data: Submit manufacturer's product characteristics, catalogue cuts, installation instructions and other relevant information for each material and product used for architectural woodwork work specified in this Section.
- 1.6.3 Safety Data Sheets (SDS): Submit SDS for inclusion in Operation and Maintenance Manual specified in Section 01 78 00 Closeout Submittals, for adhesives, sealants and any other material designated by Consultant.
- 1.6.4 Shop Drawings: Submit Shop Drawings indicating material layouts, details of construction, connections, and relationship with adjacent construction. As a minimum indicate following:
  - 1.6.4.1 Include plans, elevations, sections and details as applicable.
  - 1.6.4.2 Indicate field-measured dimensions on Shop Drawings.
  - 1.6.4.3 material characteristics, details of construction, connections and relationship with adjacent construction.
  - 1.6.4.4 locations and sizes of cutouts and holes for plumbing and electrical fixtures, lavatories and similar items required in architectural woodwork; coordinate with appropriate trades.
  - 1.6.4.5 show connections, attachments, reinforcing, anchorage and location of exposed fastenings in accordance with NAAWS Section 1.

- 1.6.5 Embodied Carbon / Environmental Product Declarations (EPDs): When available, submit product-specific or industry-wide EPDs conforming to ISO 14025 or other recognized environmental Product declaration framework meeting following criteria:
  - 1.6.5.1 EPD Scope: Must cover Cradle-to-Gate (A1 to A3) as a minimum.
  - 1.6.5.2 EPD Impact Categories: Must report Global Warming Potential (GWP) in form of unit of kgCO<sub>2</sub>e/declared unit as a minimum.
  - 1.6.5.3 Product Options: Give preference to Products with compliant documentation when choice is at Contractor's option.
- 1.6.6 Material Ingredient Disclosure: When available, submit documentation disclosing chemical inventory of materials to at least 0.1% (1000ppm) meeting following criteria:
  - 1.6.6.1 Standard: Health Product Declaration (HPD) Open Standard, Cradle to Cradle v2 (Basic level) or Cradle to Cradle v3 (Bronze level), International Living Future Institute (ILFI) Declare, or other approved material ingredient declaration framework.
  - 1.6.6.2 Product Options: Give preference to Products with compliant documentation when choice is at Contractor's option.
- 1.6.7 Samples: Submit selection and verification samples for Products requiring colour, texture, or design selection. Submit manufacturer's list of finishes or colour swatches for Consultant's selection.
  - 1.6.7.1 As a minimum submit samples of the following:
    - .1 For each colour of plastic laminate or wood veneer species selected (as applicable), submit manufacturer's standard 300 mm x 460 mm (12" x 18") chips.
    - .2 For each type of hardware.

## 1.7 CLOSEOUT SUBMITTALS

- 1.7.1 Closeout Submittals, generally: in accordance with Section 01 78 00, Closeout Submittals.
- 1.7.2 Operating and Maintenance Data: Submit care and maintenance instructions for architectural woodwork to be included in building operation and maintenance manual.
- 1.7.3 Warranty Documentation: Submit copy of extended warranties specified in this Section.

## 1.8 QUALITY ASSURANCE

- 1.8.1 Fabricator Qualifications: Provide Products for Work of this Section by casework fabricator with minimum 10 years' experience in the manufacture of such materials, and who has been a member of AWMAC in good standing for the previous 2 years.
- 1.8.2 Installer Qualifications: Engage an entity with at least five years' experience installing, erecting, or assembling work similar in material, design, and extent to that shown on Drawings and Schedules, and whose work has resulted in

construction with a track record of successful in-service performance, and who have been members of AWMAC in good standing for the previous 2 years.

- 1.8.3 Single Source Responsibility: Obtain primary materials for this Section from a single source by a single manufacturer, and secondary materials from sources recommended by manufacturers of primary materials.
- 1.8.4 Mock-Ups / First Installation Review: Construct mock-ups to verify selections made under submittals, demonstrate aesthetic effects, and to set quality standards for fabrication and installation.
  - 1.8.4.1 Location: In-situ (i.e. first installation), as directed on site by Consultant.
  - 1.8.4.2 Purpose: To set benchmarks for installation and to judge subsequent work. Maintain Mock-ups during construction in undisturbed condition.
  - 1.8.4.3 Reviewed mock-ups: May become part of the completed work if undisturbed at the time of Substantial Performance of The work, provided they are undisturbed, and comply with requirements outlined in Contract Documents.

## 1.9 DELIVERY, STORAGE AND HANDLING

- 1.9.1 Product Requirements, generally: in accordance with Section 01 61 00, Common Product Requirements.
- 1.9.2 Deliver, store and handle architectural woodwork materials in accordance with manufacturer's written instructions.
  - 1.9.2.1 Cover and protect finished surfaces with heavy kraft paper and method acceptable to Consultant. Do not remove protective covers until immediately prior to final cleaning.
  - 1.9.2.2 Where applicable, handle, store, and install fire-retardant-treated wood to comply with manufacturer's written instructions, including requirements for adhesives used to install woodwork.
- 1.9.3 Deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- 1.9.4 Store materials in off-ground, in clean, dry, well-ventilated area.
- 1.9.5 Replace defective or damaged materials with new.

## 1.10 FIELD CONDITIONS

- 1.10.1 Environmental Restrictions: Do not deliver or install architectural woodwork until building is enclosed, wet work is complete, and HVAC system is operational and will maintain temperature and relative humidity levels equal to occupancy levels for remainder of construction period.
- 1.10.2 Field Measurements: Verify actual dimensions of construction contiguous with architectural woodwork by field measurements before fabrication.

## 1.11 SITE CONDITIONS

- 1.11.1 Ambient Conditions: Ensure products are stored in climate-controlled areas with functional HVAC system and relative humidity and moisture content values that fall within the following range:



1.11.1.1 Unless indicated otherwise:

- .1 Moisture Content: 5-10%, Relative Humidity: 25-55%

## 1.12 WARRANTY

1.12.1 Extended warranty: Submit for Owner's review and acceptance, manufacturer's extended warranty in which manufacturer commits to repair or replace components of architectural woodwork that fail within specified warranty period. Manufacturer's extended warranty is in addition to, and does not supersede, any other rights that Owner may have under Contract Documents.

1.12.1.1 Warranty Period: Not less than 3 years from date of Substantial Performance of The work.

## PART 2 PRODUCTS

### 2.1 PERFORMANCE / DESIGN CRITERIA

2.1.1 Regulatory Requirements:

2.1.1.1 Provide work in accordance with North American Architectural Woodwork Standards (NAAWS), latest edition, as published by the Architectural Woodwork Association of Canada (AWMAC), unless otherwise specified herein.

2.1.1.2 All references to grades and terminology in this Section refer to grades defined in NAAWS and are incorporated into this Section by reference. Requirements specified in this Section govern and modify NAAWS.

2.1.1.3 Unless indicated otherwise, Provide work of this Section in accordance with following NAAWS grades:

- .1 Where plastic laminate facing is used: Custom.
- .2 Where wood veneer or solid wood is used: Premium.

2.1.2 VOC Content and Emissions:

2.1.2.1 Composite Wood: must be ULEF or NAF type per CARB ATCM. Do not adhesives that contain urea-formaldehyde.

2.1.3 Design and Performance Requirements:

2.1.3.1 Architectural Drawings and details are diagrammatic and are only intended to show design concept, aesthetics, interfacing requirements, configuration, components and arrangements. They are not intended to identify or solve completely problems of thermal and structural movements, assembly framing, engineering design, fixings and anchorages.

2.1.3.2 Ensure architectural woodwork (e.g. wall cabinets, cabinet drawers and similar items) are capable of supporting structural loads without deflection in accordance with Casework Integrity Tests indicated in Appendix A of NAAWS.

- .1 Minimum nominal thickness and material for cabinet components and shelf deflection, type of materials, thicknesses, span width, and total load distribution must conform to NAAWS "Section 10 -

- Casework" and be suitable for "schools, hospitals, and library" grades.
- 2.1.3.3 Seal wood surfaces and edges unless indicated otherwise. Exposed wood cores are not permitted.
  - 2.1.3.4 Provide cabinets with flush overlay construction.
  - 2.1.3.5 Provide architectural woodwork such that no sharp edges are exposed.
  - 2.1.3.6 Incorporate required mechanical, electrical and communication services into architectural woodwork so that wires and pipes are hidden from view. Provide access panels to services to allow for future adjustment.
  - 2.1.3.7 Provide built-in valance lighting underneath all upper cupboards over countertops as indicated on Drawings;
  - 2.1.3.8 Doors, drawers, and other exposed architectural woodwork edges must be fitted with heat-applied, appropriately-sized ABS or other durable PVC-free edge strips. Plastic laminate-to-plastic laminate edges are not permitted.
  - 2.1.3.9 Provide locks for of doors and drawers as indicated on Drawings. Final lock locations will be established in consultation with Owner prior to occupancy. Provide locks keyed in accordance with Owner's keying requirements.
  - 2.1.3.10 Cores for architectural woodwork must be MDF unless indicated otherwise. At locations subject to moisture, provide veneer core plywood cores and substrates. Do not use veneer core plywood at cabinet door or drawer front components and wall or ceiling panels.
  - 2.1.3.11 Provide veneer core plywood with water-resistant adhesives to bottoms of sink cabinet boxes and other areas that may come into contact with water.
  - 2.1.3.12 Fire Retardant Treated Materials:
    - .1 Where fire-retardant-treated materials are indicated or required by authorities having jurisdiction, use materials impregnated with fire-retardant chemicals by pressure process or other means acceptable to Consultant to produce Products with flame-spread ratings of less than 25 when tested in accordance to CAN/ULC-S102.
    - .2 Use chemical formulations that do not require incising, contain colorants, bleed through, or otherwise adversely affect finishes when preservative or fire-retardant treatment is required for exposed items designated to receive a stained or natural finish.

## 2.2 FRAMING LUMBER

- 2.2.1 As specified in Section 06 10 00, Rough Carpentry.
- 2.2.2 Comply with requirements of "Section 03 – Lumber" of NAAWS.

## 2.3 PANEL PRODUCTS

- 2.3.1 Comply with requirements of "Section 04 – Sheet Products" of NAAWS.
- 2.3.2 Medium Density Fibreboard Core (MDF): to ANSI A208.2, Grade 155 unless indicated otherwise.
  - 2.3.2.1 Acceptable Products: "NU Green MR50 NAF MDF" by Uniboard or approved equivalent by one of the following:
    - .1 Sierra Pine Ltd; [www.sierrapine.com](http://www.sierrapine.com)
    - .2 Flakeboard Company Limited.; [www.flakeboard.com](http://www.flakeboard.com),
    - .3 Tafisa Canada and Company, Ltd.; [www.tafisa.ca](http://www.tafisa.ca).
- 2.3.3 Veneer Core Plywood:
  - 2.3.3.1 Softwood plywood: Premium Grade, Douglas Fir plywood - CSA O121, or Western Softwood Plywood - CSA O151 or Poplar plywood - CSA O153-M.
  - 2.3.3.2 Hardwood Plywood (wood cores): Conforming to ANSI/HPVA HP-1.
  - 2.3.3.3 Provide exterior grade, veneer core plywood with moisture-resistant adhesives at locations where sinks are scheduled to be installed and at other locations indicated on Drawings
  - 2.3.3.4 Provide veneer core (plywood) at following locations:
    - .1 architectural wood casework cores subject to moisture (where sinks are indicated),
    - .2 cabinet bases in contact with floor,
    - .3 other locations indicated on Drawings and Schedules

## 2.4 PLASTIC LAMINATE

- 2.4.1 Material Tag: This item is noted as "HPL#" on Drawings and Schedules.
- 2.4.2 Comply with requirements of "Section 04 – Sheet Products" of NAAWS.
- 2.4.3 Provide high-pressure laminates (HPL) complying with requirements of ANSI/NEMA LD3 or ISO 4526 consisting of multiple layers of thermosetting resin-saturated Kraft paper in combination with a layer of decorative melamine-saturated paper, fused together under heat and pressure.
- 2.4.4 Basis of Design: Refer to Finish Schedule on Drawings
- 2.4.5 Acceptable Manufacturers:
  - 2.4.5.1 Formica Inc.; [www.formica.com](http://www.formica.com)
  - 2.4.5.2 Nevamar Company, LLC; [www.nevamar.com](http://www.nevamar.com)
  - 2.4.5.3 Wilsonart Canada; [www.wilsonart.com](http://www.wilsonart.com)
  - 2.4.5.4 Pionite by Panolam Surface Systems; [www.panolam.com](http://www.panolam.com)
- 2.4.6 Colours and Finishes: Refer to Finish Schedule on Drawings

## 2.5 PLASTIC-LAMINATE-CLAD CASEWORK

- 2.5.1 Comply with requirements of "Section 10 – Casework" of NAAWS.

- 2.5.2 Casework Construction Type: Frameless construction with edge banded front edges
- 2.5.3 Interface Style: Flush Overlay unless otherwise indicated.
- 2.5.4 Core for Exposed Surfaces, Semi-Exposed Surfaces and Concealed Surfaces: Douglas Fir Plywood (DFP), refer to Section 06 10 00 – Rough Carpentry.
- 2.5.5 Cladding: high-pressure laminate as follows:
  - 2.5.5.1 Exposed Surfaces:
    - .1 Horizontal Surfaces Other Than Tops: HGP
    - .2 Vertical Surfaces: VGP.
    - .3 Finish: As specified in this Section.
  - 2.5.5.2 Low Pressure Laminate (Melamine)
    - .1 Finish: solid colour to match exposed surfaces
- 2.5.6 Edgebanding: ABS or other durable PVC-free edgebanding colour-matched to plastic-laminate in colour, pattern, and finish with following minimum thicknesses:
  - 2.5.6.1 Case bodies: minimum 0.5 mm (0.0197”) thick,
  - 2.5.6.2 Doors, drawer fronts, and false fronts: minimum 3 mm (1/8”) thick.
  - 2.5.6.3 Basis of Design: Wilsonart or approved equivalent.

## 2.6 WOOD WINDOW FRAMES

- 2.6.1 Fabricate wood window framing in sizes indicated. Include a complete system for assembling components and anchoring windows.
- 2.6.2 Wood: Clear pine or another suitable fine-grained lumber; kiln dried to a moisture content of 6 to 12 percent at time of fabrication; free of visible finger joints, blue stain, knots, pitch pockets, and surface checks.
  - 2.6.2.1 Finish: As indicated on Drawings. Coordinate with Section 09 91 23.
- 2.6.3 Glass: Refer to Section 08 81 26
- 2.6.4 Gasket, Blocking, and Spacer Wet Glazing Materials: Silicone, compatible with and adherent to each material it will be in contact with, as recommended by the manufacturer to fulfil performance requirements.
  - 2.6.4.1 Acceptable Manufacturers: Dowsil or approved equivalent.

## 2.7 WOOD GATES

- 2.7.1 Door Panel: veneer core plywood or MDO suitable for site painting and finishing.
  - 2.7.1.1 Finish: As indicated on Drawings. Coordinate with Section 09 91 23.
- 2.7.2 Hardware: BHMA series, heavy-duty hinges, latches, and mounting brackets.
- 2.7.3 Hinge Guard: Manufacturer’s standard door hinge guards for opening side, and hinge pin side.
  - 2.7.3.1 Basis-of-Design: Model MK1A and MK1B as manufactured by Fingersafe USA, Inc.
- 2.7.4 Fasteners: Galvanized or stainless steel screws and bolts appropriate for wood construction.

## 2.8 COUNTERTOPS AND BACKSPASHES

- 2.8.1 Comply with requirements of "Section 11 – Countertops and Horizontal Surfaces" of NAAWS.
- 2.8.2 Quartz Countertops: Refer to Section 06 61 19, Quartz Agglomerate Fabrications.

## 2.9 ARCHITECTURAL WOOD CASEWORK HARDWARE AND ACCESSORIES

- 2.9.1 Provide stainless steel wood casework hardware meeting or exceeding applicable requirements indicated in ANSI/BHMA A156 Standards for Grade 1 hardware.
- 2.9.2 Slides
  - 2.9.2.1 Light Duty Drawer Slides – 610 mm (24") wide or less, Capacity: 34.02 kg (75 lbs.):
    - .1 Side Mounted Telescoping Ball Bearing drawer slide, 3/4 extension (length as required to suit drawer size); Following products are acceptable:
      - .1 Model No. Accuride – 2132 by Hafele; [www.hafele.com](http://www.hafele.com)
      - .2 Model No. KA 3432 – by Hettich; [www.hettich.com](http://www.hettich.com)
      - .3 Approved equivalent by Knappe & Vogt; [www.knappeandvogt.com](http://www.knappeandvogt.com)
  - 2.9.2.2 Light Duty Drawer Slides – 610 mm (24") wide or less, Capacity: 30 kg (66 lbs.):
    - .1 Under Mounted Telescoping Ball Bearing drawer slide, full extension (length as required to suit drawer size); Following products are acceptable: :
      - .1 "Model No. Tandem slide #560H Series" by Richelieu Hardware; [www.richelieu.com](http://www.richelieu.com)
      - .2 Model No. Quadro V6 by Hettich; [www.hettich.com](http://www.hettich.com)
      - .3 Approved equivalent by Knappe & Vogt; [www.knappeandvogt.com](http://www.knappeandvogt.com) or by Hafele; [www.hafele.com](http://www.hafele.com)
  - 2.9.2.3 Medium Duty Drawer Slides – 610 mm (24") wide or less, Capacity: 40.82 kg (90 lbs.):
    - .1 Side Mounted Telescoping Ball Bearing drawer slide with full extension and 25 mm (1") over travel (length as required to suit drawer size); Following products are acceptable: :
      - .1 Model No. Accuride – 3834 by Hafele; [www.hafele.com](http://www.hafele.com)
      - .2 Model No. 8455 by Knappe & Vogt; [www.knappeandvogt.com](http://www.knappeandvogt.com)
      - .3 Model No. KA 5632/1" OT by Hettich; [www.hettich.com](http://www.hettich.com)
  - 2.9.2.4 Medium Duty Drawer Slides – more than 610 mm (24") wide, Capacity 45.36 kg (100 lbs.)
    - .1 Side Mounted Telescoping Ball Bearing drawer slide with full extension (length as required to suit drawer size); Following products are acceptable: :
      - .1 Model No. Accuride – 3832 by Hafele; [www.hafele.com](http://www.hafele.com)

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- .2 Model No. 1375 by Knape & Vogt;  
[www.knapeandvogt.com](http://www.knapeandvogt.com)
  - .3 Model No. KA 5632 by Hettich; [www.hettich.com](http://www.hettich.com)
  - 2.9.2.5 Heavy Duty Drawer Slides – more than 610 mm (24”) wide, Capacity: 68.04 kg (150 lbs.)
    - .1 Side Mounted Telescoping Ball Bearing drawer slide with full extension and 25 mm (1”) over travel (length as required to suit drawer size); Following products are acceptable:
      - .1 Model No. Accuride – 3640 by Hafele; [www.hafele.com](http://www.hafele.com)
      - .2 Model No. 8505 by Knape & Vogt;  
[www.knapeandvogt.com](http://www.knapeandvogt.com)
      - .3 Model No. KA 555 by Hettich; [www.hettich.com](http://www.hettich.com)
  - 2.9.2.6 Trash Bin Slides: Soft closing, manual, ball bearing full extension slides with over travel complete with powder-coated steel frame, plastic cover and plastic pails. Following products are acceptable: :
    - .1 Provide “EZ-Cargo Recycling Center, #366840100” by Richelieu Hardware; [www.richelieu.com](http://www.richelieu.com)
    - .2 "Side-Mount Trash Can" by Hafele; [www.hafele.com](http://www.hafele.com)
    - .3 “Bin.It Duoll 0049474” by Hettich; [www.hettich.com](http://www.hettich.com)
  - 2.9.2.7 Flipper Door Slides: Mount as shown on Drawings. Following products are acceptable:
    - .1 "Easy-down Flipper Door Slide for wood applications - Accuride 1155;
    - .2 "Model No. 408.22 Series" by Hafele; [www.hafele.com](http://www.hafele.com)
    - .3 Approved equivalent by Richelieu Hardware; [www.richelieu.com](http://www.richelieu.com).
  - 2.9.2.8 Lid Stays:
    - .1 "Duo Swing-up Fittings" by Hafele; [www.hafele.com](http://www.hafele.com)
    - .2 “Top box stay KLS 30/250” by Hettich; [www.hettich.com](http://www.hettich.com)
    - .3 Approved equivalent complete with lid/flap stay arm, side mounting cabinet bracket and door mounting bracket.
  - 2.9.3 Cabinet Door Hinges and Stays:
    - 2.9.3.1 Wood Door Hinges:
      - .1 Frameless Concealed Hinges (European Type): Self-closing concealed hinges with integrated soft close. Manufacturer's recommended number of hinges to suit door size and thickness.
      - .2 Opening angle: Minimum 160o, except Provide 110o at locations adjacent to walls to prevent wall damage.
      - .3 Acceptable Products: "Salice Concealed Hinges 200 and 300 Series" by Hafele; [www.hafele.com](http://www.hafele.com) or "Blum Concealed - Clip-Top Hinge" by Richelieu Hardware; [www.richelieu.com](http://www.richelieu.com) or “Intermat 9943” or “Intermat 9956” by Hettich; [www.hettich.com](http://www.hettich.com)
  - 2.9.4 Door and Drawer Locks:

- 2.9.4.1 Cylinder Locks: Provide adjustable locking system with lock throw, orientation and size to suit cabinet size. Following products are acceptable: :
- .1 "Cylinder Module System; Model No. 232 Series" by Hafele; [www.hafele.com](http://www.hafele.com) complete with cam locks or deadbolt locks and cores as required to suit applications indicated.
  - .2 "Disc Tumbler Furniture Locks - Removacore" by CompX National complete with cam locks or deadbolt locks and cores as required to suit applications indicated
- 2.9.5 Handles (Doors and Drawers): Provide one of the following:
- 2.9.5.1 "Model No BP719128195" by Richelieu,
  - 2.9.5.2 "Model No 1472-140N1" by Siro,
  - 2.9.5.3 "Model No 115.70.002" by Hafele
- 2.9.6 Recessed Shelf Pilasters, Standards and Clips: Provide required accessories to mount wood or glass shelves. Following products are acceptable: :
- 2.9.6.1 "KV255" pilaster and "KV256" adjustable clip supports by Knappe & Vogt; [www.knappeandvogt.com](http://www.knappeandvogt.com)
  - 2.9.6.2 "120-10 Series" pilasters and "1903-2G" clip supports by Richelieu Hardware; [www.richelieu.com](http://www.richelieu.com)
- 2.9.7 Drawer and Hinged Door Bumpers: Provide 2 clear resilient, press-fit bumpers per door or drawer.
- 2.9.8 Closet Coat Rods: "KV660" by Knappe and Vogt Manufacturing Company, 27 mm (1-1/16") od stainless steel rod complete with "KV734 – Full Circle" polished chrome flanges. Size rods to suit closet widths.

## 2.10 FINISHES

- 2.10.1 Comply with requirements of "Section 05 – Finishing" of NAAWS.
- 2.10.2 Factory Finishing: As far as practical, ensure casework is factory finished unless otherwise indicated or unavoidable.
- 2.10.2.1 Defer only final touch-up, cleaning, and polishing until after installation.
  - 2.10.2.2 Touch up finishing work specified in this Section after installation of woodwork. Fill nail holes with matching filler where exposed.
- 2.10.3 Provide NAAWS System – 5, Varnish, Conversion or System – 7, Vinyl, Catalyzed finish unless indicated otherwise.
- 2.10.4 If staining is required or specified, match Consultant's control sample.
- 2.10.5 Prime unexposed surfaces including backs of casework elements that are against walls and their underside.

## 2.11 FABRICATION

- 2.11.1 Fabricate joints accurately fitted, coped where possible, and well glued up. Fabricate joints mitered to proper fit and with alignments carefully matched.
- 2.11.2 Fabricate finished woodwork in single pieces where possible. Fabricate running members in longest practicable lengths.

- 2.11.3 Conceal fastenings. Set nails and countersink screws and apply matching wood filler to indentations. Sand smooth and leave ready to receive finish.
- 2.11.4 Fabricate exposed gables to match adjacent exposed finishes. Ensure adjacent parts of continuous facing work match in colour and pattern.
- 2.11.5 Install cabinet hardware for doors, shelves and drawers in shop. Recess shelf standards unless noted otherwise.
- 2.11.6 Provide cutouts for plumbing fixtures, inserts, appliances, outlet boxes and other fixtures. Coordinate with other Divisions.
- 2.11.7 Shop-assemble work for delivery to site in size that can be easily handled and to ensure passage through building openings.
- 2.11.8 Apply plastic-laminate or wood veneer (as applicable) to core materials in accordance with adhesive manufacturer's instructions. Ensure core and laminate profiles coincide to provide continuous support and bond over entire surface.
- 2.11.9 Provide balanced construction. Apply backing sheet to reverse side of cores.  
Replace, rework and refinish components that do not meet NAAWS requirements for grades specified herein at no additional cost to Owner.

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- 3.1.1 Verify actual site conditions and location of adjacent materials prior to commencing work. Notify Consultant in writing of any conditions which would be detrimental to the installation. Commencement of work implies acceptance of previously completed work.
- 3.1.2 Verify that shop-fabricated work is ready for installation. Complete additional work as required, such as packing removal and back priming, before installing architectural woodwork.
- 3.1.3 Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

### **3.2 PREPARATION**

- 3.2.1 Before installation, condition woodwork to average prevailing humidity conditions in installation areas.

### **3.3 INSTALLATION**

- 3.3.1 Installation, generally: Install work of this Section in strict accordance with manufacturer's written installation instructions and reviewed Shop Drawings. Supplement manufacturer's installation instructions with additional installation requirements specified in this Section to produce specified work results.
- 3.3.2 Comply with requirements of "Section 14 – Installation" of NAAWS and other applicable requirements in corresponding product sections of NAAWS.
- 3.3.3 Assemble woodwork and complete fabrication at site to comply with fabrication requirements specified herein.



- 3.3.4 Scribe and cut woodwork to fit adjoining work. Refinish cut surfaces, and repair damaged finish at cuts. Mitre exposed corners and butt joints.
- 3.3.5 Anchor wood casework to built-in anchors or blocking or directly to substrates in order to thoroughly fix and anchor Work of this Section into position.
- 3.3.6 Secure wood casework with countersunk, concealed fasteners and blind nailing as required for complete installation. Provide heavy duty fixture attachments for wall mounted cabinets.
- 3.3.7 Use fine finishing nails or finishing screws, countersunk and filled flush with woodwork, for exposed fastening (where permitted), and matching final finish if transparent finishes are specified.
- 3.3.8 Scribe and cut as required to fit abutting walls and to fit properly into recesses and to accommodate piping, columns, fixtures, outlets or other projecting, intersecting or penetrating objects.
- 3.3.9 Cabinetry:
  - 3.3.9.1 Install cabinets without distortion to ensure doors and drawers fit openings properly and are accurately aligned.
  - 3.3.9.2 Adjust hardware to center doors and drawers in openings and to provide unencumbered operation.
  - 3.3.9.3 Install cabinets with no more than 3 mm in 2400 mm (1/8" in 8'-0") sag, bow, or other variation from straight line
  - 3.3.9.4 Maintain sequence matching of cabinets for plastic-laminate or wood veneer facings, and in accordance with NAAWS grade specified.
  - 3.3.9.5 Fasten wall cabinets with toggle bolts through metal backing or metal framing behind wall finishes through their back, near top and bottom, at ends, and at no more than 400 mm (16") o.c.
- 3.3.10 Hardware and Accessories:
  - 3.3.10.1 Install architectural wood casework hardware in accordance with NAAWS requirements and manufacturer's templates.
  - 3.3.10.2 Fit hardware accurately and securely in accordance with manufacturer's written instructions.
  - 3.3.10.3 Adjust architectural wood casework hardware to provide smooth operation and ensure clearances are maintained.
  - 3.3.10.4 Provide lubricants required and use in manner to ensure smooth function of hardware consistent with manufacturer's recommendations.
- 3.3.11 Mechanical and Electrical Fittings:
  - 3.3.11.1 Provide openings required to accommodate mechanical and electrical fittings as part of the Work of this Section.
  - 3.3.11.2 Locate and Install lenses where indicated.
  - 3.3.11.3 Mount lenses perfectly level or plumb.
  - 3.3.11.4 Ensure lenses fit tightly without showing space or light leak between frame and lenses.
  - 3.3.11.5 Refer to Divisions 21, 22 23, 26, 27 and 28 for additional requirements.

### **3.4 TOLERANCES**

3.4.1 Comply with requirements of "Section 15 – Tolerances" of NAAWS.

### **3.5 PROTECTION**

3.5.1 Protect architectural woodwork from damage, soiling and contaminating substances resulting from construction activities or caused by work of other trades.

3.5.2 Where soiling or spills have occurred, remove spills and soiling from adjacent surfaces using cleaning procedures recommended in writing by affected material's manufacturer. Do not use materials or process that can damage finishes, surfaces, or construction.

3.5.3 Promptly replace architectural woodwork work damaged during construction that cannot be satisfactorily repaired.

### **3.6 ADJUSTING, CLEANING AND WASTE MANAGEMENT**

3.6.1 Cleaning and Waste Management, generally: in accordance with Section 01 74 00, Cleaning.

3.6.2 Cleaning: Maintain clean construction area at the end of each day. When activities of this Section are complete, remove materials, tools, equipment and rubbish.

3.6.3 Clean woodwork on exposed and semi-exposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

3.6.4 Repair damaged and defective woodwork, where possible, to eliminate functional and visual defects.

3.6.5 Where repair is not possible or practical, replace woodwork to satisfaction of Consultant and at no cost to Owner.

3.6.6 Adjust joinery for uniform appearance.

3.6.7 Clean, lubricate, and adjust moving and operating parts to function smoothly and correctly.

3.6.8 Waste Management and Disposal: sort waste for reuse, recycling, or disposal, as specified. Remove recycling bins and containers from site and dispose of contents at the appropriate waste disposal facilities.

**END OF SECTION**

## **PART 1 GENERAL**

### **1.1 GENERAL INSTRUCTIONS**

- 1.1.1 Read and conform to: The general provisions of the Contract, including General and Supplementary Conditions; and the requirements of Division 01 Specifications and any additional documents referred to in this Section.

### **1.2 SUMMARY**

- 1.2.1 Provide labour, materials, products, equipment and services to complete the QUARTZ AGGLOMERATE FABRICATIONS work specified herein. This includes, but is not necessarily limited, to:
- 1.2.1.1 Quartz agglomerate countertops.
  - 1.2.1.2 Quartz agglomerate backsplashes.
  - 1.2.1.3 Adhesives and sealants.
  - 1.2.1.4 Auxiliary materials required for a complete installation.
- 1.2.2 Related Requirements: Specifications throughout all Divisions of the Project shall be read as a whole, and may be directly applicable to this Section.
- 1.2.2.1 Related requirements provided below are for convenience purposes only.
- .1 Section 06 40 00 – Architectural Woodwork
  - .2 Refer to Mechanical Drawings and Sheets A302 and A303

### **1.3 REFERENCES**

- 1.3.1 Reference Standards: Unless otherwise indicated in this Section or the Building Code, the latest published editions of reference standards as of the Project's Bid Closing deadline apply. Refer to 01 42 19 - Reference Standards.

### **1.4 PREINSTALLATION MEETINGS**

- 1.4.1 Pre-installation Meetings: Schedule, and conduct pre-installation meeting at Project Site, in order to coordinate work of this Section, with work of related Subcontractors.
- 1.4.1.1 Ensure attendance of Subcontractor performing work of this Section and representatives of manufacturers and fabricators involved in, or affected by, installation and coordination with other materials and installations that have preceded or will follow. Advise Consultant and Owner in advance of scheduled meeting dates.
  - 1.4.1.2 Agenda: Review progress of other construction activities and preparations for the particular activity under consideration.
  - 1.4.1.3 Record significant discussions, agreements, and disagreements, including required corrective measures and actions.
  - 1.4.1.4 Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.

## 1.5 ACTION SUBMITTALS

- 1.5.1 Product Data: Submit product data in accordance with Division 01 for the following:
  - 1.5.1.1 Submit manufacturer's instructions, printed product literature and data sheets for the QUARTZ AGGLOMERATE FABRICATIONS work and include product characteristics, performance criteria, physical size, finish and limitations.
- 1.5.2 Shop Drawings: Submit Shop drawings in accordance with Division 01, for quartz agglomerate fabrications. Show materials, finishes, edge and backsplash profiles, methods of joining, and cutouts for plumbing fixtures.
  - 1.5.2.1 Show locations and details of joints.
  - 1.5.2.2 Show direction of directional pattern, if any.
  - 1.5.2.3 Include elevations, section details, and large scale details.
- 1.5.3 Samples: Submit samples in accordance with Division 01, selection and verification samples for each colour, pattern, and finish required.
  - 1.5.3.1 Submit a minimum 300 mm (12 inch) wide by 150 mm (6 inch) deep, full size sample for each type of countertop shown on Drawings. Sample must include at least one seam, edge profile and backsplash as detailed on Drawings.

## 1.6 CLOSEOUT SUBMITTALS

- 1.6.1 Maintenance Data: Submit maintenance data in accordance with Division 01, for quartz agglomerate fabrications to include in maintenance manuals. Include Product Data for care products used or recommended by Installer and names, addresses, and telephone numbers of local sources for products.

## 1.7 QUALITY ASSURANCE

- 1.7.1 Fabricator Qualifications: Shop that is certified by the quartz agglomerate material manufacturer, with minimum 5 years experience, and that employs skilled workers who custom-fabricate fabrications similar to that required for this Project, and whose products have a record of successful in-service performance.
  - 1.7.1.1 Fabricator must have experience using water-cooled cutting tools.
  - 1.7.1.2 Upon request, submit quartz agglomerate manufacturer's certification attesting to fabricator qualification approval.
- 1.7.2 Mock-ups: Build mock-ups to demonstrate aesthetic effects and to set quality standards for fabrication and execution.
  - 1.7.2.1 Build mockup of typical fabrication where directed by Consultant.
  - 1.7.2.2 Subject to compliance with requirements, reviewed mock-ups may become part of the completed Work if undisturbed at time of Substantial Performance of the Work.

## 1.8 DELIVERY, STORAGE, AND HANDLING

- 1.8.1 Do not deliver materials to project site until areas are ready for installation

- 1.8.2 Deliver components and materials to the site undamaged, in containers clearly marked and labeled with manufacturer's name.
- 1.8.3 Store materials protected from exposure to harmful weather conditions, at temperature and humidity conditions recommended by the manufacturer. Store quartz surfacing sheet materials on racks in near-vertical position to preclude damage. Store with finished face turned towards finished face. Prevent warpage and breakage.
- 1.8.4 Provide protective coverings to prevent physical damage or staining following installation, for duration of project.

## 1.9 FIELD CONDITIONS

- 1.9.1 Field Measurements: Verify dimensions of fabrications by field measurements after base cabinets are installed but before fabrication is complete. Show recorded measurements on Shop Drawings.
- 1.9.2 Coordinate field measurements and fabrication schedule with construction progress to avoid construction delays
- 1.9.3 Adhesive: Acclimatize adhesives to occupancy room temperatures with maximum temperature not to exceed 24 deg C (75 deg F).

## 1.10 COORDINATION

- 1.10.1 Coordinate sizes and locations of plumbing, cut-outs, and other related work specified in other sections to ensure that quartz agglomerate fabrications can be supported and installed as indicated

## 1.11 WARRANTY

- 1.11.1 Manufacturer's Warranty: Manufacturer's standard materials-only warranty in which manufacturer agrees to Supply replacement waterproofing material for waterproofing that does not comply with requirements or that fails to remain watertight within specified warranty period.
  - 1.11.1.1 Warranty Period: 10 years from date of Substantial Performance of the Work.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- 2.1.1 Products from the following manufacturer may be acceptable for inclusion into The Work, provided they meet requirements of Contract Documents:
  - 2.1.1.1 CaesarStone;
  - 2.1.1.2 Corian Quartz by Dupont;
  - 2.1.1.3 LG Hausys;
  - 2.1.1.4 Silestone;
  - 2.1.1.5 Wilsonart LLC.

## 2.2 REGULATORY REQUIREMENTS

- 2.2.1 Accessibility Requirements: Comply with requirements of CSA B651, the Ontario Building Code and AODA.
- 2.2.2 Food Equipment Material Compliance: to NSF/ANSI 51.
- 2.2.3 Fire testing results: Provide quartz agglomerate fabrications meeting the following as determined by testing identical products by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:
  - 2.2.3.1 Surface-Burning Characteristics: As determined by testing per CAN/ULC-S102/S102.2 or equivalent to ASTM E84 subject to approval of authorities having jurisdiction.
    - .1 Flame-Spread Index: 25 or less.
    - .2 Smoke-Developed Index: 25 or less.

## 2.3 DESIGN AND PERFORMANCE REQUIREMENTS

- 2.3.1 Only quartz agglomerate materials in complying with ICPA SS-1 are acceptable. Materials must not be of coated, laminated, or of composite construction.
- 2.3.2 Veneered products consisting of a thin top layer of quartz agglomerate material with a structural substrate of plywood or particleboard are not acceptable.

## 2.4 QUARTZ AGGLOMERATE MATERIAL

- 2.4.1 Quartz Agglomerate: Solid sheets consisting of up to 93 percent quartz aggregate combined with polyester resin binders and proprietary pigments that are fabricated using vacuum vibrocompaction technology complying with ICPA SS-1 and having following physical and performance properties:
  - 2.4.1.1 Flexural Strength: Greater than 31.0 MPa (4,500 psi); ASTM D 790.
  - 2.4.1.2 Flexural Strain: Less than 0.375 percent; ASTM D 790.
  - 2.4.1.3 Flexural Modulus: Greater than  $5.3 \times 10^6$  psi; ASTM D 790.
  - 2.4.1.4 Compressive Strength (One Axis - Div.): Greater than 138 MPa (20,000 psi); ASTM C170.
  - 2.4.1.5 Stain resistance (24 Hour): No effect to moderate effect; NEMA LD-3.
  - 2.4.1.6 Abrasion Resistance: Greater than 100 in. lbs.; ASTM C 501.
  - 2.4.1.7 Density: Greater than 2.1 g/.cu. cm; ASTM D792
  - 2.4.1.8 Moisture Absorption: Less than 0.1 percent; ASTM C373.
  - 2.4.1.9 Hardness (Mohs Hardness Scale): 7
  - 2.4.1.10 Impact Resistance: 144 in. drop with no fracture; NEMA LD-3, Method 3.8.
  - 2.4.1.11 Stain Resistance: Pass; ANSI Z124.3.
  - 2.4.1.12 Wear and Cleanability: Pass; ANSI Z 124.3.
  - 2.4.1.13 Fungi Resistance: Pass; ASTM G21.
  - 2.4.1.14 Bacterial Resistance: Pass; ASTM G22.
  - 2.4.1.15 Boiling Water Resistance: No effect; NEMA LD-3, Method 3.5.
  - 2.4.1.16 High Temperature Resistance: No effect; NEMA LD-3, Method 3.6.

## 2.5 SUPPORTS

- 2.5.1 Provide structurally adequate, continuous perimeter support frames to ensure flatness and levelness of quartz agglomerate fabrications. Ensure materials are capable of providing support to inside corners and across spans. Following substrates are acceptable:
- 2.5.1.1 Plywood: Minimum 19 mm (3/4 inch) exterior softwood plywood complying with CSA O121 or CSA O151.
  - 2.5.1.2 Provide supports spaced at minimum 450 mm (18 inches) on centre or full wood underlayment as a support for horizontal sheets. In addition, provide supports at the following locations:
    - .1 Around perimeter frames,
    - .2 Around cutouts,
    - .3 Under countertop joints.
  - 2.5.1.3 Restrict unsupported overhangs to 150 mm (6 inches) maximum.

## 2.6 COMPONENTS

- 2.6.1 Countertops and Work Surfaces: Components manufactured from quartz agglomerates as specified herein and with following characteristics:
- 2.6.1.1 Thickness: 20 mm (0.79 inch)
  - 2.6.1.2 Edge Detail: As selected by Consultant from manufacturer's full range.
  - 2.6.1.3 Colours and Patterns: Refer to Finish Schedule on Drawings
  - 2.6.1.4 Backsplash: Butt splash with silicone adhesive.
  - 2.6.1.5 Basis of Design: Refer to Finish Schedule on Drawings.

## 2.7 ACCESSORY MATERIALS

- 2.7.1 Provide accessory products, as specified in this Section, manufactured by quartz agglomerate manufacturer or products approved by the quartz agglomerate manufacturer for use with the quartz agglomerate materials being specified.
- 2.7.2 Joint Adhesive: Methacrylate-based, two-part adhesive kit to create permanent, inconspicuous, non-porous, hard seams and joints by chemical bond between quartz agglomerate materials and components.
- 2.7.2.1 Color: complementary to quartz agglomerate sheet material.
  - 2.7.2.2 Acceptable Product: Manufacturer's standard type.
- 2.7.3 Elastomeric Sealant: ASTM C920, Type S (single component), Grade NS (nonsag), Mildew-resistant silicone sealant for filling gaps between countertops and terminating substrates in wet environment applications.
- 2.7.3.1 Color: complementary to quartz agglomerate sheet material.
  - 2.7.3.2 Acceptable Product: Manufacturer's standard type.
- 2.7.4 Construction Adhesive: Countertop manufacturer's recommended silicone-based construction adhesive for backsplashes, endsplashes, and other applications according to manufacturer's published fabrication instructions.
- 2.7.5 Mounting Hardware: Provide mounting hardware, including sink/bowl clips, inserts and fasteners for attachment of undermount sinks and lavatories.

## 2.8 FABRICATION

- 2.8.1 Fabricate fabrications according to quartz agglomerate manufacturer's written instructions and to the AWMAC "North American Architectural Woodwork Standards."
- 2.8.2 Fabricate components in shop, to greatest extent practicable, in sizes and shapes indicated according to approved shop drawings and manufacturer published fabrication requirements.
- 2.8.3 Form joint seams between quartz agglomerate components with specified seam adhesive. Completed joints inconspicuous in appearance and without voids. Provide joint reinforced if required by manufacturer for particular installation conditions.
- 2.8.4 Cutouts and Holes: Provide holes and cutouts for service fixtures and similar countertop-mounted items as indicated. Form cutouts to required template or pattern, with smooth, even curves and eased edges.
  - 2.8.4.1 Undercounter Plumbing Fixtures: Make cutouts for fixtures in shop using template or pattern furnished by fixture manufacturer. Form cutouts to smooth, even curves.
  - 2.8.4.2 Counter-Mounted Plumbing Fixtures: Prepare fabrications in shop for field cutting openings for counter-mounted fixtures. Mark tops for cutouts and drill holes at corners of cutout locations. Make corner holes of largest radius practical.
  - 2.8.4.3 Fittings: Drill fabrications in shop for plumbing fittings, undercounter soap dispensers, and similar items.
- 2.8.5 Fabricate tops with shop-applied edges and backsplashes unless otherwise indicated. Comply with quartz agglomerate manufacturer's written instructions for adhesives, sealers, fabrication, and finishing.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- 3.1.1 Examine substrates to receive quartz agglomerate fabrications and conditions under which fabrications will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of fabrications.
- 3.1.2 Verify actual site dimensions and location of adjacent materials prior to commencing work.
- 3.1.3 Notify Consultant in writing of any conditions which would be detrimental to installation.
- 3.1.4 Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 COUNTERTOP INSTALLATION

- 3.2.1 Install components plumb, level, rigid, scribed to adjacent finishes in accordance with reviewed Shop Drawings and Product installation details.



- 3.2.2 Install countertops deflections limited to L/360 or 3 mm (1/8") sag, bow or other variation from a straight line; whichever is less.
- 3.2.3 Mount plumbing fixtures to countertops using manufacturer's recommended adhesive, mounting hardware or color-matched silicone sealant as applicable. Secure seam mounted bowls and sinks to countertops using colour matched joint adhesive.
  - 3.2.3.1 Coordinate connections of plumbing fixtures with Division 22 and ensure fittings and accessories are provided by Division 22.
- 3.2.4 Complete cutouts not finished in shop. Mask areas of fabrications adjacent to cutouts to prevent damage while cutting. Make cutouts to accurately fit items to be installed, and at right angles to finished surfaces unless beveling is required for clearance. Ease edges slightly to prevent snipping.
  - 3.2.4.1 Seal edges of cutouts in plywood substrates by saturating with clear sealers.
  - 3.2.4.2 Seal exposed plywood edges and faces by saturating with clear sealers.
- 3.2.5 Apply sealant to gaps at walls; at expansion joints between quartz agglomerate components and joints between quartz agglomerate components and other adjacent surfaces such as walls, floors, ceiling, and plumbing fixtures. Comply with Section 07 92 00.
  - 3.2.5.1 Sealant bead must be smooth and uniform in appearance and use the minimum size necessary to bridge any gaps between the quartz agglomerate material and the adjacent surface.
  - 3.2.5.2 Install continuous bead that runs the entire length of the joint being sealed.

### 3.3 TOLERANCES

- 3.3.1 Install fabrications level to a tolerance of 3 mm in 2.4 m (1/8 inch in 8 feet), 6 mm (1/4 inch) maximum. Do not exceed 0.4-mm (1/64-inch) difference between planes of adjacent units.
  - 3.3.1.1 Maximum Variation From True Dimension: 3 mm (1/8 inch).
  - 3.3.1.2 Maximum Offset From True Position: 3 mm (1/8 inch).

### 3.4 REPAIR

- 3.4.1 Repair minor imperfections and cracked seams and replace areas of severely damaged surfaces in accordance with manufacturer's recommendations.

### 3.5 CLEANING

- 3.5.1 Remove excess adhesive and sealant from visible surfaces.
- 3.5.2 Clean surfaces in accordance with manufacturer's care and maintenance instructions.

### 3.6 PROTECTION

- 3.6.1 Provide protective coverings to prevent physical damage or staining following installation for duration of Project.

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**QUARTZ AGGLOMERATE FABRICATIONS**

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3.6.2 Protect surfaces from damage until date of Substantial Performance of the Work.

END OF SECTION

## **PART 1 GENERAL**

### **1.1 GENERAL INSTRUCTIONS**

- 1.1.1 Read and conform to: The general provisions of the Contract, , including General and Supplementary Conditions; and the requirements of Division 01 Specifications and any additional documents referred to in this Section.

### **1.2 SUMMARY**

- 1.2.1 Provide labour, materials, products, equipment and services to complete the firestopping and smoke seals work specified herein. This includes, but is not necessarily limited, to:
- 1.2.1.1 Through-penetration firestops:
    - .1 For openings created to allow a penetrating item such as piping, conduits, raceways, ducts, cable trays, cables, tubing or structural components to pass completely through a fire separation or fire-resistance rated assembly.
  - 1.2.1.2 Membrane penetration firestops:
    - .1 For openings where penetrating items such as piping, conduits, raceways, ducts, cable trays, cables, tubing, recessed components (e.g.: panels, electric boxes, devices) or structural components pass through only one membrane of a fire separation or fire-resistance rated assembly.
  - 1.2.1.3 Blank opening firestops:
    - .1 For openings created in a fire separation where the penetrating item has not yet been installed or has been removed.
  - 1.2.1.4 Construction joint firestops:
    - .1 For locations where adjacent fire separations or components of fire separations meet. These locations include: ceiling/wall and roof/wall joints, wall/wall joints at corners or in the same plane, wall/floor joints, floor/floor joints and ceiling/ceiling joints.
    - .2 Includes firestops for seismic joints, vertical control joints, expansion joints, and joints which occur at the tops and bottoms of fire separation walls.
    - .3 Includes firestops for head of wall to non-rated roof or floor assemblies.
  - 1.2.1.5 Building perimeter firestops:
    - .1 For the space between a fire-resistance rated floor assembly and the curtain wall (e.g.: safing slot gaps).
  - 1.2.1.6 Auxiliary tested accessories such as sealants, insulation, damming materials, boards, primers, collars required to complete firestopping work, excluding those inside sealed mechanical and electrical assemblies.

- 1.2.2 Related Requirements: Specifications throughout all Divisions of the Project shall be read as a whole, and may be directly applicable to this Section. Related requirements provided below are for convenience purposes only.

### 1.3 REFERENCES

- 1.3.1 Reference Standards: Unless otherwise indicated in this Section or the Building Code, the latest published editions of reference standards as of the Project's Bid Closing deadline apply. Refer to 01 42 19 - Reference Standards

### 1.4 DEFINITIONS

- 1.4.1 Fire Blocking: materials, components or system installed in a concealed space in the building to restrict the spread of fire and smoke in that concealed space or from that concealed space to an adjacent space.
- 1.4.2 Firestop: a material, component or system, and its means of support, used to protect gaps between fire separations, between fire separations and other construction assemblies, or used in openings where penetrating items wholly or partially penetrate fire separations, to restrict the spread of fire and smoke thus maintaining the fire-resistance continuity of a fire separation.
- 1.4.3 Firestop System: the combination of specific materials and/or devices required with the penetrating item(s), the assembly and the opening to assemble the firestop.
- 1.4.4 Intumescent: materials that expand with heat to prevent fire spread through fire separations.
- 1.4.5 Listed Firestop System: a specific field erected construction consisting of the assembly, firestop materials, any penetrating items and their means of support which have met the requirements for an F, FT, FH, FTH and/or L rating when tested in a fire-resistance rated assembly in accordance CAN/ULC-S115-18.
- 1.4.5.1 F-Rating: the amount of time a firestop system can remain in place without the passage of flame through the opening or the occurrence of flaming on the unexposed face of the firestop.
- 1.4.5.2 FT-Rating: a firestop system with an F-Rating for the required time period which can also resist the transmission of heat through the firestop during the same period and limit the rise in temperature on the unexposed face and/or penetrating item of the firestop.
- 1.4.5.3 FH-Rating: a firestop system with an F-Rating for the required time period which can also resist the force of a hose stream without developing openings for a prescribed period.
- 1.4.5.4 FTH-Rating: a firestop system with an FT-Rating for the required time period which also passed the hose stream test for a prescribed period.
- 1.4.5.5 L-Rating: largest test sample leakage rate, determined in accordance with CAN/ULC-S115.
- 1.4.6 Multi-penetration: two or more service penetrations through an opening in the fire separation.

- 1.4.7 Non-rated Fire Separation: fire separation acting as a barrier to the spread of smoke until a response is initiated such as the activation of a fire suppression system.
- 1.4.8 Single-penetration: single service penetration through an opening in the fire separation.
- 1.4.9 System Design Listing: document providing proof of testing with technical details, specifications and requirements that leads to the application of a specific listed firestop system.
- 1.4.10 Dry location or area: A location not normally subject to dampness.
- 1.4.11 Damp/wet location or area: Exterior or interior location that is normally or periodically subject to condensation of moisture in, on, or adjacent to, Work of this Section. This includes location in which water or other liquid can drip, splash, or flow on or against Work of this Section. This includes, but is not limited to, mechanical rooms, kitchen areas, washrooms, and associated vestibules and corridors.

## 1.5 ADMINISTRATIVE REQUIREMENTS

- 1.5.1 Pre-installation Meetings: Schedule, and conduct pre-installation meeting at Project Site, in order to coordinate work of this Section, with work of related Subcontractors.
  - 1.5.1.1 Ensure attendance of Subcontractor performing work of this Section and representatives of manufacturers and fabricators involved in, or affected by, installation and coordination with other materials and installations that have preceded or will follow. Advise Consultant and Owner in advance of scheduled meeting dates.
  - 1.5.1.2 Agenda: Review progress of other construction activities and preparations for the particular activity under consideration.
  - 1.5.1.3 Record significant discussions, agreements, and disagreements, including required corrective measures and actions.
  - 1.5.1.4 Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
- 1.5.2 Sequencing:
  - 1.5.2.1 Proceed with installation only when submittals have been reviewed by Consultant.
  - 1.5.2.2 Firestops located in floor assemblies: install before interior partition erections.
  - 1.5.2.3 Metal deck bonding: unless noted otherwise on system design listing and manufacturer's installation instructions, firestopping to precede spray applied fireproofing to ensure required bonding.
  - 1.5.2.4 Pipe and duct insulation: Provide certified firestop system component.
  - 1.5.2.5 Ensure pipe and duct insulation installation precedes firestopping.
- 1.5.3 Coordination:

- 1.5.3.1 Coordinate construction of openings and penetrating items to ensure that Firestopping and smoke seals is installed according to specified requirements.
- 1.5.3.2 Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate Firestopping and smoke seals.

## 1.6 ACTION SUBMITTALS

- 1.6.1 Product Data: Submit product data in accordance with Division 01 for each type of product indicated on Drawings and Schedules.
  - 1.6.1.1 Submit manufacturer's instructions, printed product literature and data sheets for the firestopping and smoke seals work and include product characteristics, performance criteria, physical size, finish and limitations.
- 1.6.2 Shop Drawings: Submit Shop Drawings in accordance with Division 01 for each Firestopping and smoke seals system. Include location and design designation of qualified testing and inspecting agency.
  - 1.6.2.1 Ensure Shop Drawings indicate material characteristics, details of construction, connections and relationship with adjacent construction. Submit complete and detailed Shop Drawings indicating ULC and/or cUL assembly number certification and material safety data sheets. In addition to minimum requirements, indicate following:
    - .1 Required temperature, hose stream and flame ratings,
    - .2 Material thicknesses,
    - .3 Installation methods,
    - .4 Primers,
    - .5 Damming materials as applicable.
  - 1.6.2.2 Coordinate and ensure shop Drawings for firestopping and smoke seals inside sealed mechanical and electrical assemblies are reviewed by Divisions 21, 22, 23 and 26 respectively.

## 1.7 CLOSEOUT SUBMITTALS

- 1.7.1 Submit in accordance with Section 01 78 00 Closeout Submittals.
- 1.7.2 Operation and Maintenance Data: submit operation and maintenance data for incorporation into manual. Include:
  - 1.7.2.1 WHMIS Safety Data Sheets (SDS).
  - 1.7.2.2 Product data and manufacturer's installation and maintenance instructions for each product/system used on this project.
  - 1.7.2.3 Approved system design listings and Engineering Judgments.
  - 1.7.2.4 Matrix schedule listing all system design listings and Engineering Judgments with a description of their penetration or joint type.
  - 1.7.2.5 Manufacturer's field reports.
  - 1.7.2.6 Warranty information on firestop installations.
- 1.7.3 As-built Drawings:

- 1.7.3.1 Submit marked-up set of drawings to provide referencing system identifying the location of each firestop.
- 1.7.3.2 Identify each penetration type firestop with their penetration identification number.
- 1.7.3.3 Provide detailed drawings of system design listings for each type of firestop (i.e.: through-penetration, membrane penetration, blank opening, construction joint, building perimeter).
- 1.7.4 Closeout Firestop Schedules:
  - 1.7.4.1 Submit complete firestop schedules for floors, walls and ceilings. Submit documentation for each application addressed.
  - 1.7.4.2 Indicate all penetration firestops and joint firestops through each reference wall, floor and ceiling in the schedules.
  - 1.7.4.3 Cross-reference firestop schedules with as-built drawings and indicate design listing numbers associated to each penetration firestop and joint firestop.
  - 1.7.4.4 As a minimum, indicate the following for through-penetration firestops and fire-resistive joint systems:
    - .1 Sequential Location Number
    - .2 Project Name
    - .3 Date of Installation
    - .4 Detailed description of the penetration's location
    - .5 Tested System or Engineered Judgment Number
    - .6 Type of assembly penetrated or type of construction joint.
    - .7 Detailed description of the sizes and types of penetrating items
    - .8 Lineal Footage of the joint (joint systems only)
    - .9 Size of opening or width of the joint
    - .10 Number of sides of assemblies addressed
    - .11 Hourly rating
    - .12 Installer's Name

## 1.8 MAINTENANCE MATERIAL SUBMITTALS

- 1.8.1 Firestop Documentation Software:
  - 1.8.1.1 Provide firestop documentation manager software capable of documenting and tracking firestop systems during construction, and during Owner's operation activities.
  - 1.8.1.2 Software solution must be able to track and document every firestop system installed on project and subsequent additions, changes, or removals.
  - 1.8.1.3 Software must have internet connectivity and able to operate on smartphone or tablet device (either iOS, Android or Windows capable) to capture relevant information in real-time.

- 1.8.1.4 As a minimum following is required to be tracked for each firestop application:
  - .1 Product installed,
  - .2 System installed,
  - .3 Date of installation,
  - .4 Location of penetration including notations on Architectural Drawings,
  - .5 Hourly ratings,
  - .6 Name of installer,
  - .7 Photos (pre-installation and post-installation),
  - .8 Inspection status.
- 1.8.1.5 Owner may require additional items to be tracked.
- 1.8.1.6 Basis-of-Design Software: "Hilti CFS-DM" by Hilti (Canada) Corporation or approved equivalent.

## 1.9 QUALITY ASSURANCE

- 1.9.1 Installer Qualifications: A firm experienced in installing Firestopping and smoke seals similar in material, design, and extent to that indicated on Drawings and Schedules for this Project, whose work has resulted in construction with a record of successful performance. Qualifications include having the necessary experience, staff, and training to install manufacturer's products per specified requirements. Manufacturer's willingness to sell its Firestopping and smoke seals products to Contractor or to Installer engaged by Contractor does not in itself confer qualification on buyer.
  - 1.9.1.1 Installer must be recognized as a Member in Good Standing with the Firestop Contractors International Association (FCIA). Submit written proof of current membership.
- 1.9.2 Single Source Responsibility: Provide products from a single manufacturer, to the greatest extent possible, to perform all firestopping work. Materials of different manufacturers will not be permitted without written authorization from Consultant.
  - 1.9.2.1 Materials of different manufacturers than allowed by the tested and listed system shall not be intermixed in the same firestop system or opening.
  - 1.9.2.2 Tested and listed, classified firestop systems are to be used. If another manufacturer has a tested and listed system, then that system shall be used prior to an Engineering Judgment (EJ) or Equivalent Fire Resistance Rated Assembly (EFRRA).

## 1.10 DELIVERY, STORAGE AND HANDLING

- 1.10.1 Packing, shipping, handling and unloading:
  - 1.10.1.1 Deliver, store and handle materials in accordance with Section 01 61 00 Common Product Requirements
  - 1.10.1.2 Deliver, store and handle materials in accordance with manufacturer's written instructions.



**1.10.1.3** Deliver materials to the site in undamaged condition and in original unopened containers, marked to indicate brand name, manufacturer, ULC markings, manufacturing date, shelf life expiry date.

**1.10.2** Storage and Protection:

**1.10.2.1** Store materials in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

**1.10.2.2** Replace defective, expired or damaged materials with new.

**1.10.2.3** Coordinate delivery of materials with scheduled installation dates to allow minimum storage time on site.

**1.10.2.4** Comply with recommended procedures, precautions and measures described in WHMIS Safety Data Sheets (SDS).

**1.11 PROJECT CONDITIONS**

**1.11.1** Environmental Limitations: Do not install Firestopping and smoke seals when ambient or substrate temperatures are outside limits permitted by Firestopping and smoke seals manufacturers.

**1.11.2** Install and cure Firestopping and smoke seals per manufacturer's written instructions using natural means of ventilations or, where this is inadequate, forced-air circulation.

**PART 2 PRODUCTS**

**2.1 MANUFACTURERS**

**2.1.1** Products from the following manufacturers may be acceptable for inclusion into The Work, provided they meet requirements of Contract Documents.

**2.1.1.1** 3M Fire Protection Products.

**2.1.1.2** Hilti (Canada) Limited.

**2.1.1.3** International Fireproof Technology Inc.

**2.1.1.4** Specified Technologies Inc.

**2.1.1.5** Tremco, Inc.; Tremco Fire Protection Systems Group.

**2.1.2** Basis-of-Design: This specification is based on Products and Systems by Hilti (Canada) Corporation. Comparable Products from manufacturers listed herein, offering functionally, aesthetically equivalent products in Consultant's opinion and subject to Consultant's review will be considered provided they meet the requirements of this Specification

**2.2 REGULATORY REQUIREMENTS**

**2.2.1** Fire testing results: Firestopping and smoke seals shall comply with the following requirements:

**2.2.1.1** Firestopping and smoke seals tests are performed by a qualified testing agency acceptable to authorities having jurisdiction.

**2.2.1.2** Firestopping and smoke seals are identical to those tested per testing standard referenced in this Section. Provide rated systems complying with the following requirements:

- .1 Firestopping and smoke seals products bear classification marking of qualified testing and inspecting agency.
  - .2 Classification markings on Firestopping and smoke seals correspond to designations listed by the following:
    - .1 ULC and UL in "Fire Resistance Directory."
    - .2 Intertek ETL SEMKO in its "Directory of Listed Building Products."
    - .3 ULC Guide No. 40 U19.
- 2.2.2 Provide systems selection and analysis, installation and inspection of firestop systems in accordance with the recommended practices detailed in the following guides:
- 2.2.2.1 FCIA Firestop Manual of Practice (MOP).

## 2.3 DESIGN AND PERFORMANCE REQUIREMENTS

- 2.3.1 Provide firestopping and smoke seals that are produced and installed to resist spread of fire according to requirements indicated on Drawings and Schedules, resist passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated.
- 2.3.2 Non-rated fire separations: provide L-Rated smoke protection firestop system for application on both sides of separation.
- 2.3.3 Dynamic joints: where required, fire and smoke stop systems to be designed to accommodate a defined amount of movement to account for expansion or contraction in construction joints and mechanical piping, for movement in structural elements and to accommodate for movement and sound and vibration control in mechanical installations.
- 2.3.4 Insulated pipes and ducts: listed firestop system designed and tested with actual insulation materials penetrating the fire separation, as indicated on the system design listing.
- 2.3.5 Wet areas: water based products are unacceptable in wet areas or areas that may be subject to occasional water exposure or flooding during and after construction. Products use in such areas must have a W-rating.
- 2.3.6 Architectural considerations: when exposed to view, firestop system to consider architectural finish, potential traffic, physical damage and exposure to moisture and heat. Provide firestop systems suitable for these conditions that meet conditions expected.
- 2.3.7 Environment considerations: materials selected to consider the environment in which they will be used during and after curing as well as the intended use of space. Firestop manufacturer to confirm compatibility of the proposed materials/products for the following cases:
  - 2.3.7.1 Spaces requiring resistance to infection and biological spread through assemblies.
  - 2.3.7.2 Spaces containing sensitive electronic equipment.
  - 2.3.7.3 Preventing contamination of laboratory and manufacturing environments.

- 2.3.8 Penetrations in Fire-Resistance-Rated Walls: Provide Firestopping and smoke seals with ratings determined per CAN/ULC-S115, based on testing at a positive pressure differential of 2.5 Pa (0.01-inch wg).
- 2.3.8.1 Fire-resistance-rated walls include fire-rated partitions, smoke-barrier walls (0 hour partitions), and fire walls.
- 2.3.8.2 F-Rating: Not less than the fire-resistance rating of constructions penetrated.
- 2.3.8.3 L-Rating: Not exceeding 25 L/s per sq. m (5.0 cfm/sq. ft.) of penetration opening at 75 Pa (0.30-inch wg) at both ambient and elevated temperatures.
- 2.3.9 Penetrations in Horizontal Assemblies: Provide Firestopping and smoke seals with ratings determined per CAN/ULC-S115 or equivalent to ASTM E814 or UL 1479, based on testing at a positive pressure differential of 2.5 Pa (0.01-inch wg).
- 2.3.9.1 Horizontal assemblies include fire-rated floors, floor/ceiling assemblies, and ceiling membranes of roof/ceiling assemblies.
- 2.3.9.2 F-Rating: At least 1 hour, but not less than the fire-resistance rating of constructions penetrated.
- 2.3.9.3 T-Rating: At least 1 hour, but not less than the fire-resistance rating of constructions penetrated except for floor penetrations within the cavity of a wall.
- 2.3.9.4 L-Rating: Not exceeding 25 L/s per sq. m (5.0 cfm/sq. ft.) of penetration opening at 75 Pa (0.30-inch wg) at both ambient and elevated temperatures.
- 2.3.10 Penetrations in Smoke Barriers: Provide Firestopping and smoke seals with ratings determined per UL 1479.
- 2.3.10.1 L-Rating: Not exceeding 25 L/s per sq. m (5.0 cfm/sq. ft.) of penetration opening at 75 Pa (0.30-inch wg) at both ambient and elevated temperatures.
- 2.3.11 W-Rating: Provide Firestopping and smoke seals showing no evidence of water leakage when tested according to UL 1479 (minimum Class 1).
- 2.3.11.1 Provide firestop systems with "W" Water Resistance ratings (minimum Class 1), in addition to F, T and L ratings, where indicated or required by Authorities Having Jurisdiction.
- 2.3.12 Exposed Firestopping and smoke seals: Provide products with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per CAN/ULC-S102/S102.2 or equivalent to ASTM E84.
- 2.3.13 Joints at Exterior Curtain-Wall/Floor Intersections: Provide fire-resistive joint systems with rating determined by CAN/ULC-S115 based on testing at a positive pressure differential of 2.5 Pa (0.01-inch wg) per ASTM E2307.
- 2.3.13.1 Fire-Resistance Rating: Equal to or exceeding the fire-resistance rating of the floor assembly.
- 2.3.13.2 Rain and water resistance: provide perimeter joint sealant tested in accordance with ASTM D6904 with less than 1 hour tack free time as tested in accordance with ASTM C679

- 2.3.14 Microbial and Fungal Resistance: Provide firestopping capable of achieving a Class 1 rating when tested in accordance with ASTM G21 for antibacterial and antifungal properties to inhibit growth of bacteria, mould, mildew and fungi.
- 2.3.15 Accessories: Provide components for each Firestopping and smoke seals system that are needed to install fill materials and to maintain ratings required. Use only those components specified by Firestopping and smoke seals manufacturer and approved by qualified testing and inspecting agency for firestopping indicated.
- 2.3.15.1 Permanent forming/damming/backing materials, including the following:
- .1 Slag-wool-fiber or rock-wool-fiber insulation.
  - .2 Sealants used in combination with other forming/damming/backing materials to prevent leakage of fill materials in liquid state.
  - .3 Fire-rated form board.
  - .4 Fillers for sealants.
  - .5 Temporary forming materials.
  - .6 Substrate primers.
  - .7 Collars.
  - .8 Steel sleeves.
- 2.3.16 Compatibility: Firestopping and smoke seals systems shall be compatible with one another, with the substrates forming openings, and with penetrating items if any.
- 2.3.16.1 Ensure Firestop Materials coming directly in contact with plastic pipe or plastic coated wire have undergone Firestop Material compatibility testing by Systems manufacturer or pipe and wire manufacturer.
- 2.3.16.2 All firestop systems coming into contact with CPVC Piping (direct or indirect) shall be FBC system compatible (This includes spray applied Firestop materials as overspray onto CPVC Pipe)
- 2.3.16.3 Ensure materials and Products provided do not cause stresses, chemical or physical reactions, or other damages to penetrating items or adjacent materials.
- 2.3.16.4 Ensure compatibility of firestop system components with abutting dissimilar membranes, architectural coatings, finishes at floors, walls and ceilings. Check with manufacturer requirements of materials being installed.
- 2.3.16.5 Ensure firestop system exposed to ambient conditions do not deteriorate after curing during and after completion of construction.
- 2.3.16.6 Ensure firestopping systems do not affect structural integrity of load bearing walls and assemblies. Coordinate with Consultant prior to penetrating any load bearing assembly.
- 2.3.16.7 Ensure firestopping systems do not affect acoustical performance of acoustical assemblies.
- 2.3.16.8**

## 2.4 MATERIALS

- 2.4.1 Provide asbestos-free materials and systems capable of maintaining effective barrier against the passage of flame, smoke and water and the transmission of heat in compliance with requirements of CAN-ULC-S115 and not to exceed opening sizes for which they are intended, as indicated on System Design Listing.
- 2.4.2 Cast-in-Place Firestop Devices: Factory-assembled devices for use in cast-in-place concrete floors and consisting of an outer plastic sleeve lined with an intumescent strip, a radial or square extended flange attached to one end of the sleeve for fastening to concrete formwork.
- 2.4.3 Latex Sealants: Single-component latex formulations that do not re-emulsify after cure during exposure to moisture.
- 2.4.4 Firestop Devices: Factory-assembled collars formed from galvanized steel and lined with intumescent material sized to fit specific diameter of penetrant.
- 2.4.5 Intumescent Composite Sheets: Rigid panels consisting of aluminum-foil-faced elastomeric sheet bonded to galvanized-steel sheet.
- 2.4.6 Intumescent Putties: Nonhardening dielectric, water-resistant putties containing no solvents, inorganic fibers, or silicone compounds.
- 2.4.7 Intumescent Wrap Strips: Single-component intumescent elastomeric sheets with aluminum foil on one side.
- 2.4.8 Mortars: Prepackaged dry mixes consisting of a blend of inorganic binders, hydraulic cement, fillers, and lightweight aggregate formulated for mixing with water at Project site to form a nonshrinking, homogeneous mortar.
- 2.4.9 Firestop Block: Ready-to-use, Non-curing, reusable solution intumescent flexible block designed to seal medium to large size openings.
- 2.4.10 Silicone Foams: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, nonshrinking foam.
- 2.4.11 Silicone Sealants: Single-component, silicone-based, neutral-curing elastomeric sealants of grade indicated below:
  - 2.4.11.1 Grade for Horizontal Surfaces: Pourable (self-leveling) formulation for openings in floors and other horizontal surfaces.
  - 2.4.11.2 Grade for Vertical Surfaces: Nonsag formulation for openings in vertical and other surfaces.
- 2.4.12 Firestop Joint Spray: sprayable fire rated mastic for construction joint; maximum flexibility in accordance with ASTM E1966 and UL 2079; containing no halogens, solvents or asbestos; water based, paintable.
- 2.4.13 Cementitious matrices: Capable of providing minimum 2758 kPa (400 psi) compressive strength when cured, to retard cable tray warping within firestop seal.
- 2.4.14 Primers: As required by firestopping manufacturer and compatible with selected system and contiguous materials.
- 2.4.15 Water: Potable
- 2.4.16 Pipe and duct insulation and wrappings: compatible with firestopping systems.

- 2.4.17 Intumescent pads: Permanently pliable type.
- 2.4.18 Intumescent composite sheet: Composite sheet, strip or precut shapes.
- 2.4.19 Re-penetrable Sealants: Non curing, re-penetrable intumescent sealants, caulking or putty materials for use with flexible cable or cable bundles.
- 2.4.20 Accessories: Provide miscellaneous components needed to Install fill materials and to maintain ratings required. Use only components specified by penetration firestopping manufacturer and approved by qualified testing and inspecting agency. Accessories include, but are not limited to, the following items:
  - 2.4.20.1 Permanent forming/damming/backing materials in accordance with manufacturer's recommendations, including the following:
    - .1 Slag-/rock-wool-fiber insulation.
    - .2 Sealants used in combination with other forming/damming/backing materials to prevent leakage of fill materials in liquid state.
    - .3 Fire-rated form board.
    - .4 Fillers for sealants.
  - 2.4.20.2 Temporary forming materials.
  - 2.4.20.3 Substrate primers.
  - 2.4.20.4 Collars.
- 2.4.21 Gypsum Products: The use of gypsum products for through-penetration firestopping is strictly prohibited.

## 2.5 MIXING

- 2.5.1 For those products requiring mixing before application, comply with Firestopping and smoke seals manufacturer's written instructions for accurate proportioning of materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other items or procedures needed to produce products of uniform quality with optimum performance characteristics for application indicated on Drawings and Schedules.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- 3.1.1 Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of the Work.
- 3.1.2 Examine substrates, openings, voids, adjoining construction and conditions under which firestop is to be installed. Confirm compatibility of surfaces. Verify penetrating items are securely fixed and properly located with proper space allowance between penetrations and surfaces of openings.
- 3.1.3 Confirm locations of exposed/non-exposed firestopping/smoke seal surfaces prior to application. Provide movement capability at movement joints in accordance with design requirements for movement joint.

- 3.1.4 Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- 3.2.1 Surface Cleaning: Clean out openings immediately before installing Firestopping and smoke seals to comply with manufacturer's written instructions and with the following requirements:
  - 3.2.1.1 Remove from surfaces of opening substrates and from penetrating items foreign materials that could interfere with adhesion of Firestopping and smoke seals.
  - 3.2.1.2 Clean opening substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with Firestopping and smoke seals. Remove loose particles remaining from cleaning operation.
  - 3.2.1.3 Remove laitance and form-release agents from concrete.
- 3.2.2 Masking Tape: Use masking tape to prevent Firestopping and smoke seals from contacting adjoining surfaces that will remain exposed on completion of the Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove stains. Remove tape as soon as possible without disturbing firestopping's seal with substrates.

### 3.3 INSTALLATION

- 3.3.1 Comply with UL, ULC, and cUL, listings and manufacturer's instructions for type of material and condition of opening in each case. Consult with manufacturer to determine proper procedure for conditions not fully covered by printed instructions. Record in writing any oral instructions received, with copy to manufacturer.
- 3.3.2 Install Firestopping and smoke seals to comply with manufacturer's written installation instructions and published drawings for products and applications indicated on Drawings and Schedules.
- 3.3.3 Provide firestopping to all penetrations passing through fire resistance rated wall and floor assemblies and other locations as indicated on Drawings.
- 3.3.4 Remove excess firestopping material promptly as work progresses and upon completion. Provide leak-proof dams as required to seal openings and contain firestop until cured. Install damming in accordance with test design and manufacturer's instructions.

### 3.4 IDENTIFICATION

- 3.4.1 Identify Firestopping and smoke seals with pressure-sensitive, self-adhesive, preprinted plastic labels. Attach labels permanently to surfaces adjacent to and within 150 mm (6 inches) of firestopping edge so labels will be visible to anyone seeking to remove penetrating items or firestopping. Include the following information on labels:
  - 3.4.1.1 The words "Warning - Firestopping and smoke seals - Do Not Disturb. Notify Building Management of Any Damage."
  - 3.4.1.2 Contractor's name, address, and phone number.

- 3.4.1.3 Designation of applicable testing and inspecting agency.
- 3.4.1.4 Date of installation.
- 3.4.1.5 Manufacturer's name.
- 3.4.1.6 Installer's name.
- 3.4.2 Identification labels and markings to be indelible for the expected service life of the installation.
- 3.4.3 Provide identification labels at each penetration.

### **3.5 CLEANING AND PROTECTION**

- 3.5.1 Clean off excess fill materials adjacent to openings as the Work progresses by methods and with cleaning materials that are approved in writing by Firestopping and smoke seals manufacturers and that do not damage materials in which openings occur.
- 3.5.2 Provide final protection and maintain conditions during and after installation that ensure that Firestopping and smoke seals is without damage or deterioration at time of Substantial Performance of the Work. If, despite such protection, damage or deterioration occurs, immediately cut out and remove damaged or deteriorated Firestopping and smoke seals and install new materials to produce systems complying with specified requirements.

### **3.6 FIRESTOPPING AND SMOKE SEALS SCHEDULE**

- 3.6.1 Provide listed Firestop and smoke seal systems at:
  - 3.6.1.1 Penetrations through fire-resistance rated masonry, concrete, and gypsum board partitions and walls.
  - 3.6.1.2 Top of fire-resistance rated masonry and gypsum board partitions.
  - 3.6.1.3 Intersection of fire-resistance rated masonry and gypsum board partitions.
  - 3.6.1.4 Control and sway joints in fire-resistance rated masonry and gypsum board partitions and walls.
  - 3.6.1.5 Openings and sleeves installed for future use through fire separations.
  - 3.6.1.6 Around mechanical and electrical assemblies penetrating fire separations.
  - 3.6.1.7 At expansion joints between fire-rated walls and other assemblies.
  - 3.6.1.8 Openings around structural support members that penetrate floors/walls.
  - 3.6.1.9 Openings and penetrations in fire rated walls or partitions containing fire doors.
  - 3.6.1.10 Penetrations made through fire-resistant rated assemblies in existing facility buildings for, but not necessarily limited to, mechanical and electrical services.
- 3.6.2 Firestopping and smoke seals at openings where reinstallation occurs: UL or cUL listed, Elastomeric or re-useable cementitious matrix or putty seal; do not use permanent cementitious seal at such locations.



- 3.6.3 Firestopping and smoke seals at openings around penetrations for electrical bus ducts, pipes, ductwork and other electrical and mechanical items requiring sound and vibration control or allowance for expansion, contraction and other movement: UL or cUL listed, Elastomeric seal; do not use a cementitious or rigid seal at such locations.
- 3.6.4 Firestopping and smoke seals at joints and spaces designed and required to allow movement (building movement joints, deflection spaces, control joints, expansion joints, and similar locations): UL or cUL listed, flexible, elastomeric seal suitable to withstand required movement and capable of returning to original configuration without damage to seal and without adhesive or cohesive failure; do not use a cementitious or rigid seal at such locations.

END OF SECTION

## **PART 1 GENERAL**

### **1.1 GENERAL INSTRUCTIONS**

- 1.1.1 Read and conform to: The general provisions of the Contract, including General and Supplementary Conditions; and the requirements of Division 01 Specifications and any additional documents referred to in this Section.

### **1.2 SUMMARY**

- 1.2.1 Provide labour, materials, products, equipment and services to complete the joint sealants work specified herein. This includes, but is not necessarily limited, to:
- 1.2.1.1 Exterior joint sealants,
  - 1.2.1.2 Interior joint sealants,
  - 1.2.1.3 Auxiliary materials required for a complete installation.
- 1.2.2 Related Requirements: Specifications throughout all Divisions of the Project shall be read as a whole, and may be directly applicable to this Section. Related requirements provided below are for convenience purposes only.
- 1.2.2.1 Section 08 80 05, General Requirements for Glass and Glazing for glazing sealants.
  - 1.2.2.2 Section 09 21 16, Gypsum Board Assemblies for sealing perimeter joints.
  - 1.2.2.3 Section 09 51 13, Acoustical Panel Ceilings for sealing edge moldings at perimeters with acoustical sealant.

### **1.3 REFERENCES**

- 1.3.1 Reference Standards: Unless otherwise indicated in this Section or the Building Code, the latest published editions of reference standards as of the Project's Bid Closing deadline apply. Refer to 01 42 19 - Reference Standards.

### **1.4 ADMINISTRATIVE REQUIREMENTS**

- 1.4.1 Pre-installation Meetings: Schedule, and conduct pre-installation meeting at Project Site, in order to coordinate work of this Section, with work of related Subcontractors.
- 1.4.1.1 Ensure attendance of Subcontractor performing work of this Section and representatives of manufacturers and fabricators involved in, or affected by, installation and coordination with other materials and installations that have preceded or will follow. Advise Consultant and Owner in advance of scheduled meeting dates.
  - 1.4.1.2 Agenda: Review progress of other construction activities and preparations for the particular activity under consideration.
  - 1.4.1.3 Record significant discussions, agreements, and disagreements, including required corrective measures and actions.
  - 1.4.1.4 Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.

## 1.5 PRECONSTRUCTION TESTING

- 1.5.1 Preconstruction Compatibility and Adhesion Testing: Submit to joint-sealant manufacturers, for testing indicated below, samples of materials that will contact or affect joint sealants.
  - 1.5.1.1 Use ASTM C794, ASTM C1087 or manufacturer's standard test method to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
  - 1.5.1.2 Stain Testing: Use ASTM C1248 to determine staining potential of silicone sealants in contact with porous and non-porous exterior cladding joint substrates.
  - 1.5.1.3 Submit minimum number of pieces required by sealant manufacturer of each kind of material, including joint substrates, shims, joint-sealant backings, secondary seals, and miscellaneous materials.
  - 1.5.1.4 Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
  - 1.5.1.5 For materials failing tests, obtain joint-sealant manufacturer's written instructions for corrective measures including use of specially formulated primers.
  - 1.5.1.6 Testing will not be required if joint-sealant manufacturers submit joint preparation data that are based on previous testing, not older than 24 months, of sealant products for adhesion to, and compatibility with, joint substrates and other materials matching those submitted.

## 1.6 ACTION SUBMITTALS

- 1.6.1 Product Data: Submit product data in accordance with Division 01 for the following:
  - 1.6.1.1 Submit manufacturer's instructions, printed product literature and data sheets for the joint sealants work and include product characteristics, performance criteria, physical size, finish and limitations.
- 1.6.2 Samples: Submit manufacturer's colour charts consisting of strips of cured sealants showing the full range of colours available for each product exposed to view.
  - 1.6.2.1 Verification samples: Submit samples of each type and colour of exposed joint sealant required. Provide fully cured joint sealant samples in 19 mm (3/4-inch) wide joints formed between two 300 mm (12-inch) long strips of materials to be sealed.
- 1.6.3 Joint-Sealant Schedule: Include the following information:
  - 1.6.3.1 Joint-sealant application, joint location, and designation.
  - 1.6.3.2 Joint-sealant manufacturer and product name.
  - 1.6.3.3 Joint-sealant formulation.
  - 1.6.3.4 Joint-sealant colour.

## 1.7 INFORMATIONAL SUBMITTALS

- 1.7.1 Product Certificates: Submit product certificates in accordance with Division 01 for each kind of joint sealant and accessory, from manufacturer.
- 1.7.2 Sealant, Waterproofing, and Restoration Institute (SWRI) Validation Certificate: Submit Sealant, Waterproofing, and Restoration Institute (SWRI) Validation Certificate in accordance with Division 01 for each sealant specified to be validated by SWRI's Sealant Validation Program.
- 1.7.3 Preconstruction Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:
  - 1.7.3.1 Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
  - 1.7.3.2 Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.
- 1.7.4 Field-Adhesion Test Reports: Submit fire-adhesion test reports in accordance with Division 01 for each sealant application tested.
- 1.7.5 Warranties: Submit warranties in accordance with Division 01 for special warranties specified in this section..

## 1.8 QUALITY ASSURANCE

- 1.8.1 Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
- 1.8.2 Source Limitations: Obtain each kind of joint sealant from single source from single manufacturer.

## 1.9 PROJECT CONDITIONS

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

## 1.10 WARRANTY

- 1.10.1 Extended Manufacturer's Warranty: Manufacturer's standard form in which joint-sealant manufacturer agrees to Supply joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.
  - 1.10.1.1 Warranty Period:
    - .1 20 years from date of Substantial Performance of the Work for silicone sealants; include coverage against staining substrates exposed to view.

- .2 Ten years from date of Substantial Performance of the Work for other polymer-modified (hybrid) sealants.
- .3 Five years from date of Substantial Performance of the Work for polyurethane sealants.
- .4 Two years from date of Substantial Performance of the Work for latex sealants.

## **PART 2 PRODUCTS**

### **2.1 MANUFACTURERS**

- 2.1.1 Products from the following manufacturers may be acceptable for inclusion into The Work, provided they meet requirements of Contract Documents.
  - 2.1.1.1 Master Builders Solutions Canada Inc. (Formerly BASF Canada Inc.);
  - 2.1.1.2 GE Silicones (Momentive Performance Materials)
  - 2.1.1.3 Master Builders Solutions Canada Inc;
  - 2.1.1.4 Pecora Corporation;
  - 2.1.1.5 Sika Canada Inc.;
  - 2.1.1.6 Tremco Incorporated.

### **2.2 DESIGN AND PERFORMANCE REQUIREMENTS**

- 2.2.1 Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.
- 2.2.2 Liquid-Applied Joint Sealants: Comply with ASTM C920 and other requirements indicated on Drawings and Schedules for each liquid-applied joint sealant specified, including those referencing ASTM C920 classifications for type, grade, class, and uses related to exposure and joint substrates.
  - 2.2.2.1 Suitability for Immersion in Liquids. Where sealants are indicated on Drawings and Schedules for Use I for joints that will be continuously immersed in liquids, provide products that have undergone testing according to ASTM C1247. Liquid used for testing sealants is deionized water, unless otherwise indicated on Drawings and Schedules.
- 2.2.3 Stain-Test-Response Characteristics: Where sealants are specified to be non-staining to porous substrates, provide products that have undergone testing according to ASTM C1248 and have not stained porous joint substrates indicated on Drawings and Schedules for Project.
- 2.2.4 Suitability for Contact with Food: Where sealants are indicated on Drawings and Schedules for joints that will come in repeated contact with food, provide products that comply with 21 CFR 177.2600.
- 2.2.5 Colours of Exposed Joint Sealants: As selected by Consultant from manufacturer's full range.

## 2.3 INTERIOR JOINT SEALANTS

2.3.1 Single component, nonsag, neutral curing silicone or urethane sealant, ASTM C920, Type S or Type M, Grade NS, Class 50, Class 35 or Class 25 as required for applications and joint design, for Use NT.

2.3.1.1 Interior joints in vertical surfaces and horizontal nontraffic surfaces as follows:

- .1 Control and expansion joints on exposed interior surfaces of exterior walls.
- .2 Perimeter joints of exterior openings.
- .3 Tile control and expansion joints.
- .4 Vertical joints on exposed surfaces of interior unit masonry and concrete walls and partitions.
- .5 Joints on underside of plant-precast structural concrete beams and planks.
- .6 Perimeter joints between interior wall surfaces and frames of interior doors, windows and elevator entrances.
- .7 Other joints as indicated on Drawings and Schedules.

2.3.1.2 Acceptable Products:

- .1 "Dowsil 791" or "Dowsil 795" or "Dowsil CWS" by Dow Chemical of Canada ULC
- .2 "Spectrem 2" or "Spectrem 3" or "Dymonic" or "Dymonic FC" by Tremco Incorporated
- .3 "SilPruf LM SCS2700" by GE Silicones (Momentive Performance Materials)
- .4 "890NST" or "890FTS" or "864NST" or "PCS" or "DnyaTrol I-XL" or "DynaTrol II" by Pecora Corporation
- .5 "SikaSil WS-295" by Sika Canada Inc.
- .6 Approved equivalent.

2.3.2 Mildew-Resistant, Single-Component, Nonsag, Silicone Joint Sealant, ASTM C920, Type S, Grade NS, Class 25, for Use NT

2.3.2.1 Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces as follows:

- .1 Joints between plumbing fixtures and adjoining walls, floors, and counters.
- .2 Tile control and expansion joints.
- .3 Other joints as indicated on Drawings and Schedules.

2.3.2.2 Acceptable Products: Mildew-Resistant, Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant, ASTM C920, Type S, Grade NS, Class 25, for Use NT.

- .1 "898 NST" by Pecora Corporation or approved equivalent

- 2.3.2.3 Acceptable Products: Mildew-Resistant, Single-Component, Acid-Curing or Neutral Curing Silicone Joint Sealant, ASTM C920, Type S, Grade NS, Class 25, for Use NT.
  - .1 "Dowsil 786 Mildew Resistant" or "Dowsil Tub/Ceramic/Tile" by Dow Corning Corporation
  - .2 "Silicones; Sanitary SCS1700" by GE Silicones (Momentive Performance Materials)
  - .3 "Tremsil 200 Sanitary" by Tremco Incorporated
  - .4 "Sikasil GP/GP HT" by Sika Canada Inc.
  - .5 "898 NST" by Pecora Corporation
- 2.3.3 Nonsag, paintable, nonstaining latex complying with ASTM C834 or butyl rubber sealant complying with ASTM C1311.
  - 2.3.3.1 Surface Burning Characteristics: Flame spread and smoke developed indexes not greater than 25 and 450, respectively.
  - 2.3.3.2 Interior acoustical joints in vertical surfaces and horizontal nontraffic surfaces as follows:
    - .1 Acoustical joints at top and bottom of gypsum board partitions; at top of masonry walls and through non fire-rated penetrations in gypsum and masonry walls.
    - .2 Other joints as indicated on Drawings and Schedules.
  - 2.3.3.3 Acceptable Products:
    - .1 "AC-20 FTR" or "AIS-919" by Pecora Corporation
    - .2 "SHEETROCK Acoustical Sealant" by CGC Inc.
    - .3 "QuietZone Acoustic Sealant" by Owens-Corning Canada Inc.
    - .4 "Tremco Acoustical Sealant" by Tremco Ltd.
    - .5 "QuietSeal" or "QuietSeal 350" by Serious Materials.
    - .6 "CP506 – Smoke and Acoustic Sealant" by Hilti
    - .7 "RCS20" by GE Silicones (Momentive Performance Materials)
    - .8 "MasterSeal NP520" by Master Builders Solutions
- 2.3.4 Acrylic latex or siliconized acrylic latex, ASTM C834, Type OP, Grade NF.
  - 2.3.4.1 Interior non-acoustical joints in vertical surfaces and horizontal nontraffic surfaces as follows:
    - .1 Non-acoustical and non-moving joints between interior painted surfaces and adjacent materials.
  - 2.3.4.2 Acceptable Products:
    - .1 "MasterSeal NP520 by Master Builders Solutions"
    - .2 "AC-20+" by Pecora Corporation
    - .3 "Tremflex 834" by Tremco Incorporated
- 2.3.5 Single-Component Silicone complying with ASTM C920, Grade NS, Class 25 or butyl rubber sealant complying with ASTM C1311.

- 2.3.5.1 Interior traffic joints as follows:
  - .1 Concealed sealants for bedding thresholds and sills.
- 2.3.5.2 Acceptable Products:
  - .1 "Dowsil 758" by Dow Corning Corporation
  - .2 "Tremco Butyl Sealant" by Tremco Incorporated
  - .3 "BC-158" or "BA-98" by Pecora Corporation
  - .4 "MasterSeal NP1" by Master Builders Solutions
- 2.3.6 Silicone glazing sealant, ASTM C920, Type S, Grade NS, Class 25, Use NT.
  - 2.3.6.1 Glazing applications as follows:
    - .1 Non-structural sealing for butt-glazing in interior applications and other non-moving glazing joints.
  - 2.3.6.2 Acceptable Products:
    - .1 "Dowsil 799" or "Dowsil Glazing" by Dow Chemical of Canada ULC
    - .2 "UltraGlaze SSG4000" or "UltraGlaze SSG4000AC" by GE Silicones (Momentive Performance Materials)
    - .3 "Tremsil 200" by Tremco Incorporated
    - .4 "Sikasil - N Plus" by Sika Canada Inc.

## 2.4 JOINT SEALANT BACKING

- 2.4.1 General: Provide sealant backings of material that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated on Drawings and Schedules by sealant manufacturer based on field experience and laboratory testing.
- 2.4.2 Cylindrical Sealant Backings: ASTM C1330, Type C (closed-cell material with a surface skin) or Type B (bicellular material with a surface skin) or Type O (open-cell) as approved in writing by joint-sealant manufacturer for joint application indicated on Drawings and Schedules, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
- 2.4.3 Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

## 2.5 MISCELLANEOUS MATERIALS

- 2.5.1 Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated on Drawings and Schedules, as determined from preconstruction joint-sealant-substrate tests and field tests.
- 2.5.2 Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.



- 2.5.3 Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

### **PART 3 EXECUTION**

#### **3.1 EXAMINATION**

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

#### **3.2 PREPARATION**

- 3.2.1 Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
- 3.2.1.1 Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
- 3.2.1.2 Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include, but are not limited to the following:
- .1 Concrete.
  - .2 Masonry.
- 3.2.1.3 Remove laitance and form-release agents from concrete.
- 3.2.1.4 Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include, include but are not limited to the following:
- .1 Metal.
  - .2 Glass.
- 3.2.2 Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated on Drawings and Schedules by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- 3.2.3 Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or

damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

### 3.3 INSTALLATION OF JOINT SEALANTS

- 3.3.1 General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated on Drawings and Schedules, unless more stringent requirements apply or are indicated.
- 3.3.2 Sealant Installation Standard: Comply with recommendations in ASTM C1193 for use of joint sealants as applicable to materials, applications, and conditions indicated on Drawings and Schedules.
- 3.3.3 Install sealant backings as recommended by joint sealant manufacturer to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
  - 3.3.3.1 Do not leave gaps between ends of sealant backings.
  - 3.3.3.2 Do not stretch, twist, puncture, or tear sealant backings.
  - 3.3.3.3 Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- 3.3.4 Install sealants using proven techniques that comply with the following and at the same time backings are installed:
  - 3.3.4.1 Place sealants so they directly contact and fully wet joint substrates.
  - 3.3.4.2 Completely fill recesses in each joint configuration.
  - 3.3.4.3 Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- 3.3.5 Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated on Drawings and Schedules; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
  - 3.3.5.1 Remove excess sealant from surfaces adjacent to joints.
  - 3.3.5.2 Use tooling agents that are approved in writing by sealant manufacturer and that do not discolour sealants or adjacent surfaces.
  - 3.3.5.3 Provide concave joint profile per Figure 8A in ASTM C1193, unless otherwise indicated on Drawings and Schedules.
  - 3.3.5.4 Provide flush joint profile where indicated on Drawings and Schedules per Figure 8B in ASTM C1193.
  - 3.3.5.5 Provide recessed joint configuration of recess depth and at locations indicated per Figure 8C in ASTM C1193.
    - .1 Use masking tape to protect surfaces adjacent to recessed tooled joints.
- 3.3.6 Acoustical Sealant Installation: At sound-rated assemblies and elsewhere as indicated on Drawings and Schedules, seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at

perimeters and through penetrations. Comply with ASTM C919 and with manufacturer's written recommendations.

### **3.4 CLEANING**

3.4.1 Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

### **3.5 PROTECTION**

3.5.1 Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Performance of the Work. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

END OF SECTION

## **PART 1 GENERAL**

### **1.1 GENERAL INSTRUCTIONS**

- 1.1.1 Read and conform to: The general provisions of the Contract, including General and Supplementary Conditions; and the requirements of Division 01 Specifications and any additional documents referred to in this Section.

### **1.2 SUMMARY**

- 1.2.1 Provide labour, materials, products, equipment and services to complete the STEEL DOORS AND FRAMES work specified herein. This includes, but is not necessarily limited, to:
- 1.2.1.1 Interior doors and frames
  - 1.2.1.2 Hollow-metal panels
  - 1.2.1.3 Frame anchors
  - 1.2.1.4 Auxiliary materials required for a complete installation.
- 1.2.2 Related Requirements: Specifications throughout all Divisions of the Project shall be read as a whole, and may be directly applicable to this Section.
- 1.2.2.1 Related requirements provided below are for convenience purposes only.

### **1.3 REFERENCES**

- 1.3.1 Reference Standards: Unless otherwise indicated in this Section or the Building Code, the latest published editions of reference standards as of the Project's Bid Closing deadline apply. Refer to 01 42 19 - Reference Standards

### **1.4 DEFINITIONS**

- 1.4.1 Minimum Thickness: Minimum thickness of base metal without coatings according to NAAMM-HMMA 803 or SDI A250.8.
- 1.4.2 Performance Levels and Duty-rating: Conform to NAMM/HMMA 805 as modified in this Section:
- 1.4.2.1 Standard Duty Assemblies:
    - .1 Door Frame: Minimum 1.06 mm (18 ga - 0.042 inch)
    - .2 Door Face: Minimum 1.06 mm (18 ga - 0.042 inch)
  - 1.4.2.2 Medium Duty Assemblies:
    - .1 Door Frame: Minimum 1.34 mm (16 ga - 0.053 inch)
    - .2 Door Face: Minimum 1.06 mm (18 ga - 0.042 inch)
  - 1.4.2.3 Heavy Duty Assemblies:
    - .1 Door Frame: Minimum 1.34 mm (16 ga - 0.053 inch)
    - .2 Door Face: Minimum 1.34 mm (16 ga - 0.053 inch)

## 1.5 ADMINISTRATIVE REQUIREMENTS

- 1.5.1 Pre-installation Meetings: Schedule, and conduct pre-installation meeting at Project Site, in order to coordinate work of this Section, with work of related Subcontractors.
  - 1.5.1.1 Ensure attendance of Subcontractor performing work of this Section and representatives of manufacturers and fabricators involved in, or affected by, installation and coordination with other materials and installations that have preceded or will follow. Advise Consultant and Owner in advance of scheduled meeting dates.
  - 1.5.1.2 Agenda: Review progress of other construction activities and preparations for the particular activity under consideration.
  - 1.5.1.3 Record significant discussions, agreements, and disagreements, including required corrective measures and actions.
  - 1.5.1.4 Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
- 1.5.2 Coordination
  - 1.5.2.1 Coordinate anchorage installation for Pressed Steel Frames. Supply setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

## 1.6 ACTION SUBMITTALS

- 1.6.1 Product Data: Submit product data in accordance with Division 01 for the following:
  - 1.6.1.1 Submit manufacturer's instructions, printed product literature and data sheets for the STEEL DOORS AND FRAMES work and include product characteristics, performance criteria, physical size, finish and limitations.
  - 1.6.1.2 Include construction details, material descriptions, core descriptions, and finishes.
- 1.6.2 Shop Drawings: Submit Shop Drawings in accordance with Division 01. Include the following:
  - 1.6.2.1 Indicate each type of door, frame, steel, construction and core clearly demonstrating the following:
    - .1 Elevations of each door type.
    - .2 Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
    - .3 Frame details for each frame type, including dimensioned profiles and metal thicknesses.
    - .4 Locations of reinforcement and preparations for hardware.
    - .5 Details of each different wall opening condition.
    - .6 Details of anchorages, joints, field splices, and connections.

- .7 Details of accessories.
- .8 Details of moldings, removable stops, and glazing.
- .9 Details of conduit and preparations for power, signal, and control systems.
- 1.6.2.2 Indicate material thickness, mortises, reinforcements, anchorages, locations of exposed fasteners, openings (glazed, paneled or louvered) and arrangement of standard hardware.
- 1.6.2.3 Include schedule identifying each unit, with door marks and numbers relating to Consultant's numbering on Drawings and Door Schedule.
- 1.6.3 Samples:
  - 1.6.3.1 Submit samples for each type of exposed finish required, prepared on Samples of not less than 75 by 127 mm (3 by 5 inches).
  - 1.6.3.2 When requested by Consultant, submit fabrication Samples approximately 203 by 254 mm (8 by 10 inches) to demonstrate compliance with requirements for quality of materials and construction:
    - .1 Doors: Show vertical-edge, top, and bottom construction; core construction; and hinge and other applied hardware reinforcement. Include separate section showing glazing if applicable.
    - .2 Frames: Show profile, corner joint, floor and wall anchors, and silencers. Include separate section showing fixed hollow-metal panels and glazing if applicable.
- 1.6.4 Schedule: Provide a schedule of hollow-metal work prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final Door Hardware Schedule.

## 1.7 INFORMATIONAL SUBMITTALS

- 1.7.1 Product Test Reports: Submit product test reports in accordance with Division 01 for each type of hollow-metal door and frame assembly, for tests performed by a qualified testing agency. As a minimum, submit the following test reports:
  - 1.7.1.1 Confirmation that acoustic door and frame assemblies provide the STC and sound TL values specified within the critical frequency range, as determined and scheduled by the Consultant.
  - 1.7.1.2 Ensure reports include name of testing authority, date of test, location of test facility, descriptions of test specimens, procedures used in testing and indicate compliance with acceptance criteria of test.

## 1.8 QUALITY ASSURANCE

- 1.8.1 Manufacturers: Execute work in this Section by a manufacturer who is a member of CSDMA and NAAMM.
  - 1.8.1.1 Ensure product is manufactured by a firm experienced in design and production of standard and custom commercial steel door and frame assemblies, integration of builders' or electronic hardware and glazing assemblies, and other items affecting work.

- 1.8.2 Supplier Qualifications: Ensure Product Supplier has Architectural Hardware Consultant (AHC) or person of equivalent experience, available at reasonable times to consult with Consultant, Contractor and Owner.
- 1.8.3 Installer Qualifications:
  - 1.8.3.1 Provide work of this Section executed by competent installers with minimum 5 years' experience in the application of Products, systems and assemblies specified and with approval and training of Product manufacturers.
- 1.8.4 Welding:
  - 1.8.4.1 Provide welding in accordance with CSA W59-M performed by a fabricator and mechanics fully approved by the Canadian Welding Bureau as specified herein.
  - 1.8.4.2 Ensure fabricator is fully certified by Canadian Welding Bureau for fusion welding of steel structures to CSA W47.1 and for fusion welding of aluminum to CSA W47.2.
- 1.8.5 Single Source Responsibility: Ensure primary materials provided in this Section are obtained from 1 source by a single manufacturer and secondary materials are obtained from sources recommended by primary materials manufacturers.

## 1.9 DELIVERY, STORAGE, AND HANDLING

- 1.9.1 Delivery and Acceptance Requirements:
  - 1.9.1.1 Deliver hollow-metal work palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.
  - 1.9.1.2 Provide additional protection to prevent damage to factory-finished units.
  - 1.9.1.3 Deliver welded frames with two temporary shipping spreader bars across bottom of frames, tack welded to jambs and mullions. Temporary spreader bars are intended for shipping and handling purposes only, and must not be used for installation purposes.
- 1.9.2 Storage and Handling Requirements:
  - 1.9.2.1 Provide site storage and protection of materials in accordance with NAAMM-HMMA 840. Store items in dry, secure location on planks or dunnage.
  - 1.9.2.2 Store Door and frame Products in vertical position, spaced with blocking. Cover materials to protect them from damage but in such a manner as to permit air circulation.
  - 1.9.2.3 Immediately Make Good any damage acquired during shipping or handling. Clean scratches and touch up with rust-inhibitive primer. Replace damaged work which cannot be repaired, restored or cleaned.
  - 1.9.2.4 For welded frames, weld in two temporary jamb spreaders per door opening to maintain proper alignment during shipment and handling. Do not use temporary jamb spreaders for installation.

## 1.10 FIELD CONDITIONS

- 1.10.1 Verify actual opening sizes and field conditions by field measurement before fabrication. Submittal drawings must reflect measurements and conditions provided, and product manufactured accordingly. Coordinate field measurements with fabrication and construction schedules to avoid delays.
- 1.10.2 Verify that substrate conditions, whether existing or otherwise, are as detailed on Drawings, and are acceptable for product installation in accordance with manufacturer's instructions.
- 1.10.3 Do not proceed with fabrication without receipt of reviewed Shop Drawings and reviewed construction hardware schedule.

## 1.11 WARRANTY

- 1.11.1 Warrant Work of this Section for period of one year from date of Substantial Performance of the Work against defects and deficiencies in accordance with General Conditions of the Contract. Promptly correct defects or deficiencies which become apparent within warranty period, to satisfaction of Consultant and at no expense to Owner.
- 1.11.2 Extended Rust-perforation Warranty: Standard manufacturer's standard form in which manufacturer agrees to repair finishes or replace doors that show evidence of excessive rusting within specified warranty period.
  - 1.11.2.1 Warranty Period: 5 years from date of Substantial Performance of the Work.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- 2.1.1 Products from the following manufacturers may be acceptable for inclusion into The Work, provided they meet requirements of Contract Documents.
  - 2.1.1.1 Artek Door Limited; [www.artekdoor.com](http://www.artekdoor.com)
  - 2.1.1.2 Baron Hollow Metal; [www.baronmetal.com](http://www.baronmetal.com)
  - 2.1.1.3 Daybar Industries Limited; [www.daybar.com](http://www.daybar.com)
  - 2.1.1.4 Fleming Door Products-Baron Door Products; an Assa Abloy Group company; [www.flemingdoor.com](http://www.flemingdoor.com).
  - 2.1.1.5 Gensteel Doors; [www.gensteeldoors.com](http://www.gensteeldoors.com)
  - 2.1.1.6 LMT Group inc.
  - 2.1.1.7 Trillium Steel Doors Ltd.

### 2.2 REGULATORY REQUIREMENTS

- 2.2.1 Labelling requirements:
  - 2.2.1.1 Provide label of recognized testing agency having factory inspection service, and constructed as listed or classified for labeling in accordance with NFPA 80, listing authority's policies and label materials.
  - 2.2.1.2 Listing must identify manufacturer.



2.2.2 Smoke- and Draft-Control Assemblies:

- 2.2.2.1 Provide an assembly with gaskets listed and labeled for smoke and draft control by a qualified testing agency acceptable to authorities having jurisdiction, based on testing according to UL 1784 and installed in compliance with NFPA 105.

**2.3 DESIGN AND PERFORMANCE REQUIREMENTS**

- 2.3.1 Unless otherwise indicated, construct doors to be minimum 44.5 mm (1-3/4 inches) thick.
- 2.3.2 Construct doors to meet requirements of NAAMM-HMMA 861 and CSDMA specifications. Ensure door and frame Products are fabricated in strict accordance with reviewed Shop Drawings. Ensure steel is free of scale, pitting, coil breaks, surface blemishes, buckles, waves and other defects.
- 2.3.3 Facilitate installation of electrical components complete with arrangement so conduits and wiring can be readily removed and replaced.

**2.4 MATERIALS**

- 2.4.1 Metallic-Coated Steel Sheet: ASTM A653/A 653M, Commercial Steel (CS), Type B.
- 2.4.1.1 Interior doors and frames unless indicated otherwise: Comply with A 653/A 653M, Designation ZF 120 (A40)
- 2.4.2 Frame Anchors: ASTM A879/A 879M, Commercial Steel (CS), 12G (04Z) coating designation; mill phosphatized.
- 2.4.3 Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A153/A 153M.
- 2.4.4 Grout: ASTM C476, except with a maximum slump of 102 mm (4 inches), as measured according to ASTM C143/C 143M.
- 2.4.5 Mineral-Fiber Insulation: CAN/ULC S702 or equivalent to ASTM C665 (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing CAN/ULC-S114 or equivalent to ASTM E136 for combustion characteristics.
- 2.4.6 Glazing: Comply with requirements in Section 08 80 05, General Requirements for Glass and Glazing.
- 2.4.7 Bituminous Coating: Cold-applied asphalt mastic, compounded for 0.4-mm (15-mil) dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

**2.5 COMPONENTS**

- 2.5.1 Door Core Materials:
- 2.5.1.1 Honeycomb: Structural small cell 25.4 mm (1 inch) maximum kraft paper 'honeycomb'. Weight: 36.3 kg (80 lb.) per ream minimum, density: 16.5 kg/m<sup>3</sup> (1.03 pcf) minimum, sanded to required thickness.

- 2.5.1.2 Polystyrene: Rigid extruded, fire retardant, closed cell board, Type 1 with a minimum density of 16 kg/m<sup>3</sup> (1.0 lbs/cu ft) and minimum R-value of RSI 1.05 (R6.0).
- 2.5.1.3 Polyurethane: CAN/ULC-S702, Rigid, polyurethane, board with a density of 32 kg/m<sup>3</sup> (2.0 lbs/cu ft) and minimum thermal resistance rating of RSI 1.92 (R11)

## 2.6 INTERIOR DOORS AND FRAMES

- 2.6.1 Construct interior doors and frames to comply with the standards indicated in this Section for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.
- 2.6.2 Standard-Duty Doors and Frames:
  - 2.6.2.1 Physical Performance: Level C according to ANSI/SDI A250.4.
  - 2.6.2.2 Doors:
    - .1 Materials: Metallic-coated steel sheet, minimum 1.06 mm (18 ga - 0.042 inch); galvanized as specified herein.
    - .2 Edge Construction: Following constructions are acceptable:
      - .1 Full Flush; Mechanically interlocked, adhesive assisted and tack welded at top and bottom of door, 150 mm (6") on centre and above and below each edge cutout, filled with metal filler and ground smooth with no visible seams.
      - .2 Seamless; continuously welded and ground smooth with no visible seams.
    - .3 Core: Kraft-paper honeycomb.
    - .4 Basis-of-Design: "D-Series" by Fleming or approved equivalent.
  - 2.6.2.3 Frames:
    - .1 Materials: Metallic-coated steel sheet, minimum 1.06 mm (18 ga - 0.042 inch); galvanized as specified herein.
    - .2 Construction: Knocked down unless indicated otherwise.
    - .3 Basis-of-Design:
      - .1 "M Series" by Fleming or approved equivalent for frames occurring in masonry construction.
      - .2 "DW Series" by Fleming or approved equivalent for frames occurring in gypsum board construction.
      - .3 "EXP Series" by Fleming or approved equivalent for frames occurring in existing partitions.
  - 2.6.2.4 Exposed Finish: Factory-primed for site finishing.
  - 2.6.2.5 Locations: Service Closets (mechanical, plumbing, electrical etc.)
- 2.6.3 Medium-Duty Doors and Frames:
  - 2.6.3.1 Physical Performance: Level B according to ANSI/SDI A250.4.
  - 2.6.3.2 Doors:
    - .1 Materials: Metallic-coated steel sheet, minimum 1.06 mm (18 ga - 0.042 inch); galvanized as specified herein.

- .2 Edge Construction: Seamless; continuously welded and ground smooth with no visible seams.
- .3 Core: Polystyrene.
- .4 Basis-of-Design: "CW-Series" by Fleming or approved equivalent.
- 2.6.3.3 Frames:
  - .1 Materials: Metallic-coated steel sheet, minimum 1.34 mm (16 ga - 0.053 inch); galvanized as specified herein.
  - .2 Construction: Face welded unless indicated otherwise.
  - .3 Basis-of-Design:
    - .1 "M Series" by Fleming or approved equivalent for frames occurring in masonry construction.
    - .2 "DW Series" by Fleming or approved equivalent for frames occurring in gypsum board construction.
    - .3 "EXP Series" by Fleming or approved equivalent for frames occurring in existing partitions.
- 2.6.3.4 Exposed Finish: Factory-primed for site finishing.
- 2.6.3.5 Locations: Private offices, private washrooms, janitor closets and similar locations.
- 2.6.4 Heavy-Duty Doors and Frames:
  - 2.6.4.1 Physical Performance: Level A according to ANSI/SDI A250.4.
  - 2.6.4.2 Doors:
    - .1 Materials: Metallic-coated steel sheet, minimum 1.34 mm (16 ga - 0.053 inch); galvanized as specified herein.
    - .2 Edge Construction: Seamless; continuously welded and ground smooth with no visible seams.
    - .3 Core: Vertical steel stiffened
    - .4 Basis-of-Design: "H-Series" by Fleming or approved equivalent.
  - 2.6.4.3 Frames:
    - .1 Materials: Metallic-coated steel sheet, minimum 1.34 mm (16 ga - 0.053 inch); galvanized as specified herein.
    - .2 Construction: Face welded or full profile welded unless indicated otherwise.
    - .3 Basis-of-Design:
      - .1 "M Series" by Fleming or approved equivalent for frames occurring in masonry construction.
      - .2 "DW Series" by Fleming or approved equivalent for frames occurring in gypsum board construction.
      - .3 "EXP Series" by Fleming or approved equivalent for frames occurring in existing partitions.
  - 2.6.4.4 Exposed Finish: Factory-primed for site finishing.
  - 2.6.4.5 Locations: Public stairwells, corridors, public bathrooms, emergency exit doors, and similar locations.

## 2.7 HOLLOW-METAL PANELS

2.7.1 Provide hollow-metal panels of same materials, construction, and finish as adjacent door assemblies.

## 2.8 FABRICATION

2.8.1 Fabricate hollow-metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for metal thickness. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.

2.8.1.1 Provide factory-preparation and reinforcements for doors and frames including mortising, blanking, drilling and tapping for templated hardware only, in accordance with the reviewed hardware schedule and templates provided by hardware supplier.

2.8.1.2 Reinforce doors and frames in factory only where required, for surface-mounted hardware, anchor hinges, thrust pivots, pivot reinforced hinges, or non-templated hardware. Perform drilling and tapping on site, at time of installation.

2.8.1.3 Prior to shipment, mark each door and frame with identification number as shown on approved Shop Drawings.

2.8.2 Hollow-Metal Doors:

2.8.2.1 Holes 12.7 mm (0.5") diameter and larger must be factory-prepared, except mounting and through-bolt holes, which are made on site, at time of hardware installation. Holes less than 12.7 mm (0.5") diameter will be factory-prepared only when required for device (for knob, lever, cylinder, thumb or turn pieces) or when holes overlap function holes.

2.8.2.2 Vertical Edges for Single-Acting Doors: Bevel edges 3 mm in 50 mm (1/8 inch in 2 inches) unless otherwise required to suit finish hardware or door swings.

2.8.2.3 Top Edge Closures:

- .1 Interior locations (hospitals): Sealed, flush steel closures, continuously welded.
- .2 Interior locations (security locations): Non-sealed, flush steel closures.
- .3 Interior locations (commercial buildings): Inverted steel closures.

2.8.2.4 Bottom Edge Closures: Close bottom edges of door with end closures or channels of same material as face sheets.

- .1 Interior locations (hospitals): Sealed, flush steel closures, continuously welded.
- .2 Interior locations (security locations): Non-sealed, flush steel closures.
- .3 Interior locations (commercial buildings): Inverted steel closures.

2.8.2.5 Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where

- indicated on Drawings and Schedules. Extend minimum 19 mm (3/4 inch) beyond edge of door on which astragal is mounted or as required to comply with published listing of qualified testing agency.
- 2.8.3 Pressed Steel Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.
- 2.8.3.1 Protect mortised cutouts in frames with steel guard boxes.
- 2.8.3.2 Sidelight and Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by butt welding.
- 2.8.3.3 Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
- 2.8.3.4 Grout Guards: Weld guards to frame at back of hardware mortises in frames to be grouted.
- 2.8.3.5 Floor Anchors: Weld anchors to bottoms of jambs with at least four spot welds per anchor; however, for slip-on drywall frames, provide anchor clips or countersunk holes at bottoms of jambs.
- 2.8.3.6 Jamb Anchors: Provide anchorage appropriate to floor, wall and frame construction. Locate each anchor immediately above or below each hinge reinforcement on hinge jamb and directly opposite strike jamb.
- .1 Provide number and spacing of anchors as follows:
- .1 Two anchors per jamb up to 1520 mm (60 inches) high.
- .2 Provide additional anchor for each additional 760 mm (30 inches) of height or fraction thereof up to 3050 mm (120 inches) high.
- .3 Provide four anchors per jamb plus one additional anchor per jamb for each 610 mm (24 inches) or fraction thereof above 3050 mm (120 inches) high.
- .2 Frames in previously placed concrete, masonry or structural steel: Locate anchors not more than 150 mm (6 inches) from the top and bottom of each jamb, and intermediate anchors at 660 mm (26 inches) o.c. maximum.
- .3 Frames in stud-Wall Type: Locate anchors not more than 457 mm (18 inches) from top and bottom of frame, and intermediate anchors at 813 mm (32 inches) o.c. maximum.
- .4 Where frame product is installed prior to adjacent partition, securely attach floor anchor to the inside of each jamb profile.
- .1 Provide each floor anchor with two (2) holes for securing to floor. For conditions that do not permit the use of floor anchors, provide additional wall anchor, located within 150 mm (6 inches) of base of jamb.
- 2.8.3.7 Door Silencers: Except on weather-stripped and gasketed frames, drill stops to receive door silencers as follows. Keep holes clear during construction.

- 
- .1 Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
  - 2.8.3.8 Welded Type Frames (interior locations as noted herein):
    - .1 Frame products must be accurately mitered or mechanically jointed.
    - .2 Full Profile welded: punch-mitered - continuously welded on profile faces, rabbets, returns and soffit intersections, or saw-mitered - continuously welded on the profile faces, rabbets, returns, stops and soffit intersections.
      - .1 Punch or saw-mitered, at the manufacturer's discretion.
      - .2 All profile welded frame product exposed faces must be filled and ground to a smooth, uniform, seamless surface.
    - .3 Face welded: continuously welded on the profile faces, with exposed faces filled and ground to a smooth, uniform, seamless surface.
    - .4 Joints at mullions, sills and center rails:
      - .1 Must be coped accurately, butted and tightly fitted.
      - .2 At intersecting flush profile faces, be securely welded, filled and ground to a smooth, uniform, seamless surface.
      - .3 At intersecting recessed profile faces, be securely welded to concealed reinforcements, with exposed hairline face seams.
      - .4 At all other intersecting profile elements, have exposed hairline face seams.
    - .5 Glazing stops must be formed steel channels, minimum 16 mm (0.625 inch) height, accurately fitted, butted at corners and fastened to frame sections with counter-sunk oval head sheet metal screws.
  - 2.8.3.9 Knocked Down Type Frames (interior locations as noted herein):
    - .1 Ship knocked-down type frames unassembled.
    - .2 Provide frames with mechanical joints which inter-lock securely and provide functionally satisfactory performance when assembled and installed in accordance with the manufacturer's instructions.
  - 2.8.4 Hardware Preparation: Factory prepare hollow-metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to SDI A250.6, CSDMA Specifications, Door Hardware Schedule, and templates. Refer to Section 08 71 00 for additional requirements:
    - 2.8.4.1 Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.
    - 2.8.4.2 Comply with applicable requirements in BHMA A156.115 and CSDMA Specifications for preparation of hollow-metal work for hardware.
      - .1 Lock and Strike Reinforcements: 1.34 mm (16 ga - 0.053 inch) – regular-duty types

- .2 Hinge Reinforcements: 2.36 mm (12 ga - 0.093 inch) – regular-duty types
  - .3 Flush Bolt Reinforcements: 1.34 mm (16 ga - 0.053 inch) – regular-duty types
  - .4 Reinforcements for Surface Applied Hardware: 1.06 mm (18 ga - 0.042 inch) – regular-duty types
  - .5 Top and Bottom Channels: 1.06 mm (18 ga - 0.042 inch)
  - .6 Steel Top Caps: 0.81 mm (20 ga - 0.032 inch)
  - .7 Mortar Guard Boxes: 0.66 mm (22 ga - 0.026 inch)
  - .8 Floor Anchors: 1.34 mm (16 ga - 0.053 inch)
  - .9 Wall Anchors:
    - .1 Masonry Strap Type: 1.06 mm (18 ga - 0.042 inch)
    - .2 Masonry Wire Type: 4.0 mm (0.156 inch) dia.
    - .3 Masonry Stirrup-Strap Type: 1.34 mm (16 ga - 0.053 inch)
    - .4 Stud Type: Designed to engage stud, welded to back of frames; not less than 1.0 mm (18 ga - 0.042 inch) thick.
    - .5 Existing Masonry /Concrete Wall Type: not less than 1.0 mm (18 ga - 0.042 inch) thick.
- 2.8.4.3 Where electrified hardware is specified on Hardware Schedule, Provide CSA-approved system consisting of CSA-approved conduit, junction boxes and wire harnesses complete with modular plugs for coordinated connection directly to electrified hardware.
- 2.8.5 Stops and Moldings for Glazing: Provide accurately fitted stops and moldings around glazed lites and louvers where indicated on Drawings and Schedules. Form corners of stops and moldings with butted hairline joints.
- 2.8.5.1 Single Glazed Lites: Provide fixed stops and moldings welded on secure side of hollow-metal work.
  - 2.8.5.2 Multiple Glazed Lites: Provide fixed and removable stops and moldings so that each glazed lite is capable of being removed independently.
  - 2.8.5.3 Provide loose stops and moldings on inside of hollow-metal work.
  - 2.8.5.4 Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated on Drawings and Schedules.
  - 2.8.5.5 Glass Trim (Screw Fixed or Snap-In Types): 0.81 mm (20 ga - 0.032 inch)
    - .1 For glazing up to 8 mm (5/16 inch) thick: steel glazing trim and snap-in glazing stops as specified herein.
    - .2 For glazing thicker than 8 mm (5/16 inch): steel glazing trim and screwed-in glazing stops as specified herein. Screws must be #6 x 1-1/4" oval head self-drilling type at 300 mm (12 inch) o.c. maximum.
    - .3

## 2.9 STEEL FINISHES

- 2.9.1 Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.

- 2.9.1.1 Provide factory-applied touch up primer at areas where zinc coating has been removed during fabrication.
- 2.9.2 Factory Finish: Clean, pretreat, and apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat, complying with SDI A250.3.
  - 2.9.2.1 Colour and Gloss: As selected by Consultant from manufacturer's full range.

### **PART 3 EXECUTION**

#### **3.1 EXAMINATION**

- 3.1.1 Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- 3.1.2 Examine roughing-in for embedded and built-in anchors to verify actual locations before frame installation.
- 3.1.3 Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- 3.1.4 Proceed with installation only after unsatisfactory conditions have been corrected.

#### **3.2 PREPARATION**

- 3.2.1 Remove welded-in temporary shipping bars installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.
- 3.2.2 Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

#### **3.3 INSTALLATION**

- 3.3.1 General: Install hollow-metal work plumb, rigid, properly aligned, and securely fastened in place. Comply with Drawings and manufacturer's written instructions.
- 3.3.2 Pressed Steel Frames: Install Pressed Steel Frames of size and profile indicated on Drawings and Schedules. Comply with NAAMM-HMMA 840 and CSDMA Specifications as required by standards specified.
  - 3.3.2.1 Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
    - .1 Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
    - .2 Install frames with removable stops located on secure side of opening.



- .3 Install door silencers in frames before grouting.
  - .4 Remove temporary braces necessary for installation only after frames have been properly set and secured.
  - .5 Check plumb, square, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
  - .6 Field apply bituminous coating to backs of frames that will be filled with grout agents.
- 3.3.2.2 Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with anchors.
- 3.3.2.3 Metal-Stud Partitions: Solidly pack mineral-fiber insulation inside frames.
- 3.3.2.4 Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout.
- 3.3.2.5 In-Place Concrete or Masonry Construction: Secure frames in place with anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
- 3.3.2.6 In-Place Stud Partitions: Secure slip-on drywall frames in place according to manufacturer's written instructions.
- 3.3.2.7 Installation Tolerances: Adjust hollow-metal door frames for squareness, alignment, twist, and plumb to the following tolerances:
- .1 Squareness: Plus or minus 1.6 mm (1/16 inch), measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
  - .2 Alignment: Plus or minus 1.6 mm (1/16 inch), measured at jambs on a horizontal line parallel to plane of wall.
  - .3 Twist: Plus or minus 1.6 mm (1/16 inch), measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
  - .4 Plumbness: Plus or minus 1.6 mm (1/16 inch), measured at jambs at floor.
- 3.3.3 Hollow-Metal Doors: Fit hollow-metal doors accurately in frames, within clearances specified below. Shim as necessary.
- 3.3.3.1 Non-Fire-Rated Steel Doors:
- .1 Between Door and Frame Jambs and Head: 3.2 mm (1/8 inch) plus or minus 1.5 mm (1/16 inch).
  - .2 Between Edges of Pairs of Doors: 3.2 mm (1/8 inch) plus or minus 1.5 mm (1/16 inch).
  - .3 At Bottom of Door: Provide floor clearance for functional operation of doors of not less than 3.2 mm (1/8 inch) plus or minus 1.5 mm (1/16 inch), unless greater undercuts are indicated on Door Schedule or required for mechanical air flow.

- 3.3.3.2 Smoke-Control Doors: Install doors and gaskets according to NFPA 105.
- 3.3.4 Glazing: Comply with installation requirements in Section 08 80 05, General Requirements for Glass and Glazing and with hollow-metal manufacturer's written instructions.
  - 3.3.4.1 Secure stops with countersunk flat- or oval-head machine screws spaced uniformly not more than 230 mm (9 inches) o.c. and not more than 51 mm (2 inches) o.c. from each corner.
- 3.4 ADJUSTING AND CLEANING**
  - 3.4.1 Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow-metal work that is warped, bowed, or otherwise unacceptable.
  - 3.4.2 Remove grout and other bonding material from hollow-metal work immediately after installation.
  - 3.4.3 Metallic-Coated Surface Touchup: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.

END OF SECTION

## **PART 1 GENERAL**

### **1.1 GENERAL INSTRUCTIONS**

- 1.1.1 Read and conform to: The general provisions of the Contract, including General and Supplementary Conditions; and the requirements of Division 01 Specifications and any additional documents referred to in this Section.

### **1.2 SUMMARY**

- 1.2.1 Provide labour, materials, products, equipment and services to complete the FLUSH WOOD DOORS work specified herein. This includes, but is not necessarily limited, to:
- 1.2.1.1 Doors for opaque finish.
  - 1.2.1.2 Priming and finishing of wood doors.
  - 1.2.1.3 Factory fitting flush wood doors to frames and factory machining for hardware.
- 1.2.2 Related Requirements: Specifications throughout all Divisions of the Project shall be read as a whole, and may be directly applicable to this Section. Related requirements provided below are for convenience purposes only.
- 1.2.2.1 Section 09 91 23, Interior Painting for field finishing doors.

### **1.3 REFERENCES**

- 1.3.1 Reference Standards: Unless otherwise indicated in this Section or the Building Code, the latest published editions of reference standards as of the Project's Bid Closing deadline apply. Refer to 01 42 19 - Reference Standards.

### **1.4 DEFINITIONS**

- 1.4.1 Opaque Finish: A paint or pigmented stain finish that hides the natural characteristics and color of the grain of the wood surface and is not transparent.

### **1.5 PREINSTALLATION MEETINGS**

- 1.5.1 Pre-installation Meetings: Schedule, and conduct pre-installation meeting at Project Site, in order to coordinate work of this Section, with work of related Subcontractors.
- 1.5.1.1 Ensure attendance of Subcontractor performing work of this Section and representatives of manufacturers and fabricators involved in, or affected by, installation and coordination with other materials and installations that have preceded or will follow. Advise Consultant and Owner in advance of scheduled meeting dates.
  - 1.5.1.2 Agenda: Review progress of other construction activities and preparations for the particular activity under consideration.
  - 1.5.1.3 Record significant discussions, agreements, and disagreements, including required corrective measures and actions.

- 1.5.1.4 Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.

## 1.6 ACTION SUBMITTALS

- 1.6.1 Product Data: Submit product data in accordance with Division 01 for the following:
  - 1.6.1.1 Submit manufacturer's instructions, printed product literature and data sheets for the FLUSH WOOD DOORS work and include product characteristics, performance criteria, physical size, finish and limitations.
  - 1.6.1.2 Include details of core and edge construction and trim for openings. Include factory-finishing specifications.
- 1.6.2 Shop Drawings: Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data; and the following:
  - 1.6.2.1 Door schedule indicating door and frame location, type, size, fire protection rating, and swing.
  - 1.6.2.2 Door elevations, dimension and locations of hardware, lite and louver cutouts, and glazing thicknesses.
  - 1.6.2.3 Details of frame for each frame type, including dimensions and profile.
  - 1.6.2.4 Details of electrical raceway and preparation for electrified hardware, access control systems, and security systems.
  - 1.6.2.5 Dimensions and locations of blocking for hardware attachment.
  - 1.6.2.6 Dimensions and locations of mortises and holes for hardware.
  - 1.6.2.7 Clearances and undercuts.
  - 1.6.2.8 Requirements for veneer matching.
  - 1.6.2.9 Doors to be factory primed finished and application requirements.
- 1.6.3 Samples:
  - 1.6.3.1 Corner sections of doors, approximately 200 by 250 mm (8 by 10 inches), with door faces and edges representing actual materials to be used.
    - .1 Provide Samples for each species of veneer and solid lumber required.
    - .2 Provide Samples for each colour, texture, and pattern of plastic laminate required.
  - 1.6.3.2 Frames for light openings, 150 mm (6 inches) long, for each material, type, and finish required.

## 1.7 QUALITY ASSURANCE

- 1.7.1 Source Limitations: Obtain flush wood doors from single manufacturer.

## 1.8 DELIVERY, STORAGE, AND HANDLING

- 1.8.1 Comply with requirements of referenced standard and manufacturer's written instructions.

1.8.2 Package doors individually in cardboard cartons and wrap bundles of doors in plastic sheeting.

1.8.3 Mark each door on top and bottom rail with opening number used on Shop Drawings.

## 1.9 FIELD CONDITIONS

1.9.1 Environmental Limitations: Do not deliver or install doors until spaces dry and HVAC system is operating and maintaining temperature between 16 and 32 deg C (60 and 90 deg F) and relative humidity between 25 and 55 percent during remainder of construction period.

## 1.10 WARRANTY

1.10.1 Extended Warranty: Repair or replace doors that fail in materials or workmanship within specified warranty period.

1.10.1.1 Failures include, but are not limited to, the following:

- .1 Delamination of veneer or facing.
- .2 Warping (bow, cup, or twist) more than 6.4 mm (1/4 inch) in a 1067-by-2134-mm (42-by-84-inch) section.
- .3 Telegraphing of core construction in face veneers exceeding 0.25 mm in a 76.2-mm (0.01 inch in a 3-inch) span.

1.10.1.2 Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors.

1.10.1.3 Warranty Period for Solid-Core Interior Doors: Life of installation.

1.10.1.4 Warranty Period for Hollow-Core Interior Doors: Two year(s) from date of Substantial Performance of the Work.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

2.1.1 Products from the following manufacturers may be acceptable for inclusion into The Work, provided they meet requirements of Contract Documents.

2.1.1.1 Algoma-Marshfield; A Masonite company.

2.1.1.2 Baillargeon; A Masonite company.

2.1.1.3 Lambton Doors.

2.1.1.4 Marshfield Door Systems, Inc.; A Masonite company.

2.1.1.5 Mohawk Doors; a Masonite company.

2.1.1.6 VT Industries, Inc.

### 2.2 PERFORMANCE REQUIREMENTS

2.2.1 Quality Standard: Comply with WDMA I.S.1-A, "Architectural Wood Flush Doors and as follows in accordance with WDMA I.S.1-A Performance Grade:

2.2.1.1 Heavy Duty: unless otherwise indicated on Drawings and Schedules.

- 2.2.1.2 Extra Heavy Duty: Classrooms public washrooms, janitor's closets and where indicated on Drawings and Schedules.
- 2.2.1.3 Standard Duty: Closets (not including janitor's closets) and private washrooms and where indicated on Drawings and Schedules.

## 2.3 SOLID-CORE THREE-PLY FLUSH WOOD DOORS FOR OPAQUE FINISH

- 2.3.1 Grade: Custom.
- 2.3.2 Construction: Three plies, hot-pressed bonded with MDO faces.
  - 2.3.2.1 Apply MDO to standard-thickness, closed-grain, hardwood face veneers or directly to high-density hardboard crossbands.
- 2.3.3 Core for Non-Fire-Rated Doors:
  - 2.3.3.1 ANSI A208.1, Grade LD-1 or Grade LD-2 particleboard (density-range 28 – 32 lbs/cu.ft) or agrifibre doors as specified herein.
  - 2.3.3.2 Provide doors with laminated-strand-lumber (LSL) or WDMA I.S. 10 structural-composite-lumber cores instead of particleboard cores for doors scheduled to receive exit devices (non-fire-rated).

## 2.4 FABRICATION

- 2.4.1 Factory fit doors to suit frame-opening sizes indicated.
  - 2.4.1.1 Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.
  - 2.4.1.2 Comply with NFPA 80 requirements for fire-rated doors.
- 2.4.2 Factory machine doors for hardware that is not surface applied.
  - 2.4.2.1 Locate hardware to comply with DHI-WDHS-3.
  - 2.4.2.2 Coordinate with hardware mortises in metal frames, to verify dimensions and alignment before factory machining.
  - 2.4.2.3 For doors scheduled to receive electrified locksets, provide factory-installed raceway and wiring to accommodate specified hardware.
- 2.4.3 Metal Astragals: Factory machine astragals and formed-steel edges for hardware for pairs of fire-rated doors.
- 2.4.4 Transom and Side Panels:
  - 2.4.4.1 Fabricate matching panels with same construction, exposed surfaces, and finish as specified for associated doors.
  - 2.4.4.2 Finish bottom edges of transoms and top edges of rabbeted doors same as door stiles.
  - 2.4.4.3 Fabricate door and transom panels with full-width, solid-lumber, rabbeted, meeting rails.
  - 2.4.4.4 Provide factory-installed spring bolts for concealed attachment into jambs of metal door frames.
- 2.4.5 Openings: Factory cut and trim openings through doors.
  - 2.4.5.1 Light Openings: Trim openings with moldings of material and profile indicated.

## 2.5 FACTORY PRIMING

2.5.1 Factory prime faces, all four edges, edges of cutouts, and mortises with one coat of wood primer.

## 2.6 FACTORY FINISHING

2.6.1 Comply with referenced quality standard for factory finishing.

2.6.2 Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.

2.6.3 Finish faces, all four edges, edges of cutouts, and mortises. Specifically, seal top and bottom edges, hardware preparation areas, mortises and hinges and lock areas.

2.6.4 Factory finish doors that are indicated on Drawings to receive transparent finish.

## PART 3 EXECUTION

### 3.1 EXAMINATION

3.1.1 Examine doors and installed door frames, with Installer present, before hanging doors.

3.1.1.1 Verify that installed frames comply with indicated on Drawings and Schedules requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.

3.1.1.2 Reject doors with defects.

3.1.2 Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION

3.2.1 Hardware: Refer to Section 08 71 00, Door Hardware.

3.2.2 Installation Instructions: Install doors to comply with manufacturer's written instructions and referenced quality standard, and as indicated on Drawings and Schedules.

3.2.2.1 Install fire-rated doors according to NFPA 80.

3.2.2.2 Install smoke- and draft-control doors according to NFPA 105.

3.2.3 Job-Fitted Doors: Align and fit doors in frames with uniform clearances and bevels as indicated below; do not trim stiles and rails in excess of limits set by manufacturer or permitted for fire-rated doors. Machine doors for hardware. Seal edges of doors, edges of cutouts, and mortises after fitting and machining.

3.2.3.1 Clearances: Provide 3.2 mm (1/8 inch) at heads, jambs, and between pairs of doors. Provide 3.2 mm (1/8 inch) from bottom of door to top of decorative floor finish or covering unless otherwise indicated on Drawings and Schedules. Where threshold is shown or scheduled, provide 6.4 mm (1/4 inch) from bottom of door to top of threshold unless otherwise indicated on Drawings and Schedules.

- 3.2.3.2 Bevel non-fire-rated doors 3-1/2 degrees (1/8 inch in 2 inches) at lock and hinge edges.
- 3.2.3.3 Do not fit and machine fire-rated doors on site.
- 3.2.4 Factory-Fitted Doors: Align in frames for uniform clearance at each edge. Comply with NFPA 80 for fire-rated doors.
- 3.2.5 Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

### 3.3 ADJUSTING

- 3.3.1 Operation: Rehang or replace doors that do not swing or operate freely.
- 3.3.2 Finished Doors: Replace doors that are damaged or that do not comply with requirements. Doors may be repaired or refinished if Work complies with requirements and shows no evidence of repair or refinishing.

END OF SECTION



## SECTION 08 71 00-FINISH HARDWARE

### PART 1 – GENERAL

#### 1.1 WORK INCLUDED

- .1 Furnish, deliver and install finish hardware.
- .2 It is intended that the following list of hardware will cover finish hardware to complete the project. Bring to the Consultants attention any omissions, discrepancies that will affect work in this section during the bidding period.

#### 1.2 RELATED SECTIONS

- .1 General Requirements Division 1
- .2 06 20 00 Finish Carpentry
- .3 06 40 00 Architectural Woodwork
- .4 08 10 00 Doors and Frames
- .5 08 40 00 Entrances, Storefronts and Curtain Walls
- .6 Division 26 Electrical
- .7 Division 28 Electronic Safety and Security

#### 1.3 PRODUCTS SUPPLIED BUT NOT INSTALLED IN THIS SECTION

- .1 Power supplies, compressor/control boxes, junction boxes installed by Division 26.

#### 1.4 REFERENCES

- .1 Door and Hardware Institute - Recommended locations for Architectural Hardware for Standard Steel Doors and Frames
- .2 Door and Hardware Institute - Recommended locations for Architectural Hardware for Flush Wood Doors
- .3 CSDMA-Recommended Dimension Standards for Commercial Steel Doors and Frames (Hardware Locations)
- .4 NFPA 80-Standard for Fire Doors and Windows, 1999 Edition
- .5 Door and Hardware Institute - Sequence Format for Hardware Schedule
- .6 Door and Hardware Institute - Key Systems and Nomenclature
- .7 Door and Hardware Institute - Abbreviations and Symbols used in Architectural Door and Hardware Schedules and Specifications
- .8 Door and Hardware Institute – Installation Guide for Doors and Hardware
- .9 Ontario Building Code 2012

## SECTION 08 71 00-FINISH HARDWARE

### 1.5 SUBMITTALS

- .1 Updated Finish Hardware Schedule:  
Submit submittals in accordance with Section 01 30 00 Submittal Procedures. Prepare detailed hardware schedules in Door and Hardware (DHI) vertical format as detailed in Reference 1.4.4.
- .2 LEED submittals:
  1. Submit LEED submittals in accordance with Section 01 35 00 Special Procedures.
  2. Submit documentation to verify compliance with LEED objectives and requirements.
- .3 Product Data:  
Submit in a three-ring binder six (6) copies of product data sheets with the finish hardware schedule showing items of hardware to be used on the project.
- .4 Samples:  
When requested in writing, provide (to the Consultants Site Office) one sample of each hardware item complete with fasteners, within thirty (30) calendar days of award of a purchase order. Samples to be clearly labeled with their hardware schedule designation and manufacturers' name and model number. Samples will be incorporated into the work.
- .5 Templates:  
Submit templates within to related trades when requested.
- .6 Keying Schedule:  
After a keying meeting between representatives of the Owner, furnish a keying schedule listing the levels of keying as well as an explanation of the key system's function, the key symbols used, and the door numbers controlled. Utilize "Door and Hardware Institute - Key Systems and Nomenclature" as a guideline for nomenclature, definitions, and approach for selecting the optimal keying system. Provide 3 copies of keying schedule for review prepared and detailed in accordance with referenced DHI publication. Include schematic keying diagram and index each key to unique door designations. Index keying schedule by door number, keyset, hardware heading number, cross keying instructions, and special key stamping instructions. Provide one complete bitting list of key cuts and one key system schematic illustrating system usage and expansion. Forward bitting list, key cuts and key system schematic directly to Owner, by means as directed by Owner.
- .7 Wiring Diagrams  
Co-ordinate with related trades, meet with the owner and security provider and submit a written description of the functional use (mode of operation) of electrical hardware products specified. Include operation for ingress, egress, fire alarm, and after hours use where applicable. Include door and frame elevations showing the location of each item of electrical hardware to be installed, mode of operation including a diagram showing number and size of conductors. Indicate on elevation drawing items provided by related trades, include for back boxes, and 120V power sources. Provide point to point drawings showing terminal connections necessary for a complete installation.
- .8 Operations and Maintenance Data  
Prior to Substantial Completion, furnish to the owner, two (2) copies of an owner's operation and maintenance manuals in a three-ring binder with the following information:
  1. Name of hardware distributor, address and contact name
  2. Copy of final "as-built" finish hardware schedule
  3. As installed "wiring diagrams, elevations, risers, point to point"
  4. Copy of final keying schedule

## SECTION 08 71 00-FINISH HARDWARE

5. Copy of floor plans with keying nomenclature assigned to door numbers as per the approved keying schedule
6. Catalogue cut sheets and product specifications for each product
7. Parts list for each product
8. Installation instructions and templates for each product

### 1.7 QUALITY ASSURANCE

- .1 Review installation procedures with the Contractor's Designated Installers. Hold instruction meetings with installers prior to installation and subsequent review meetings during the installation period. Submit minutes of meetings to the Consultant.
- .2 Substitutions  
Only approved products specified are accepted. Make substitution requests in accordance with Division 1. Include product data and indicate benefit to the project.
- .3 Supplier Qualifications  
Successful hardware distributor to have a minimum of five (5) years' experience in the door and hardware industry. Distributor to have on staff an Architectural Hardware Consultant (A.H.C.) whose name will be listed on the hardware schedule title page submittal and will be responsible for scheduling, detailing, (see Reference 1.5.4) ordering and co-ordination of the finishing hardware for this project. If so, requested by the Consultant and or installer this individual will be required to visit the jobsite for any installation problems that may occur.
- .4 Designated Installers  
Hardware Installers must have a minimum of five (5) years' experience in installation of hardware. Provide verification of installer's qualification to Consultant for approval. Installers to attend review meetings with the Hardware Distributor.

### 1.8 DELIVERY, STORAGE AND HANDLING

- .1 Marking and Packaging  
Mark cartons with heading number, door number, and key-set symbol where applicable in original packaging provided by the manufacturer. Pack packaged hardware in suitable wrappings and containers to protect it from damage during shipping and storage.  
Enclose accessories, fastening devices and other loose items with each applicable item of hardware.
- .2 Delivery  
Deliver hardware to related trades.
- .3 Storage  
Store in a clean, dry room with lockable man door and adequate shelving to permit organization so item numbers are readily visible.

### 1.9 WARRANTY

- .1 Furnish warranties by the accepted manufacturers:

<b>Hardware Item</b>	<b>Length of Warranty</b>
Mortise Hinges	1 year
Locks (L, ALX Series) Mechanical	10 years
Keypad Locks	1 year
Door Closers - Mechanical	10 years

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Door Closers – Mechanical 4040XP series	30 years
Door Closers – Mechanical 1460 series	30 years
Door Operators - Electro Mechanical	2 years
Overhead Stops/Holders	10 year
Floor/Wall stops	1 year
Gasketing (ZERO)	5 years
Power Supplies	3 years

### 1.10 MAINTENANCE

- .1 Maintenance Service  
After the building is occupied arrange an appointment with the maintenance staff from the St. Lawrence Daycare for instruction of proper use, servicing, adjusting and lubrication of hardware furnished. Submit to the consultant a list of attendees and meeting date.
- .2 Extra Materials  
Furnish the following items in proper manufacturer's cartons once the job has been completed:
  1. 5 of each installation tool used for locks/passage/privacy, type of door closers, and exit devices.

## PART 2 – PRODUCTS

### 2.1 MANUFACTURERS

Products listed in the hardware groups are from the manufacturers listed below:

ITEM	MANUFACTURER NAME
Full Mortise Hinges	Ives
Locksets, Latchsets/Deadbolts	Schlage
Cylinders	Schlage
Door Closers	LCN
Overhead Door Holders/Stops	Glynn Johnson
Door Pulls/Flatware	Ives
Wall/Floor Stops	Ives
Weather/Smoke/Sound Seals	Zero
Door Sweeps/Thresholds	Zero
Automatic Door Operators/Actuators	LCN

### 2.1 MATERIALS

1. **Screws and Fasteners:**  
Screws and fasteners to be matching finish to their product and to be manufacturer's standard. Door closers, door holders and exit devices installed on fire rated wood doors and hollow metal doors to be attached with fasteners to meet NFPA 80 requirements.
2. **Materials-Acceptable Manufacturers (Note: Supply products in a given category from the same manufacturer):**
  - .1 **Mortise Hinges**  
Provide five knuckle bearing hinges with NRP option on reverse bevel doors with locking

## SECTION 08 71 00-FINISH HARDWARE

hardware. Hinge width to accommodate door closer projection, door trim and allow for 180-degree swing. Doors up to 2286mm (90") in height, supply 3 hinges, doors greater than 2286mm in height add one hinge for every additional 760mm of door height. Doors 915mm (36") wide and less furnish 114mm (4-1/2") high hinges, doors greater than 915mm (36") wide furnish 127mm (5") high hinges, heavy weight or standard weight as specified. Supply ferrous (steel), stainless steel material for all interior and/or fire-rated doors and stainless steel for exterior doors.

As Specified: Ives Hinges, 5BB1, 5BB1HW

### .2 Locksets/Deadlocks/Privacy Sets:

#### **Cylindrical-Lever:**

Standard duty commercial exterior and interior cUL listed for functions up to 3-hour doors. Latch bolts to be steel with minimum 13mm (1/2") throw deadlocking on keyed functions. 19mm (3/4") throw anti-friction latchbolt on pairs of fire doors. Levers to be solid pressure cast zinc with no plastic inserts. Precision solid brass 6-pin cylinder with nickel silver keys available in Schlage keyways. Grade 2 lever sets to have through bolts to prevent chassis rotation with internal components and chassis constructed of cold rolled steel with zinc dichromate plating to resist corrosion. Lever sets to have independent heavy-duty compression springs as well as precision laser cut stainless steel spindles with interlocking on keyed side.

Supply as Specified: Schlage "ALX" series

#### **Mortise:**

Grade 1 Operational, Grade 1 Security, mortise lock for commercial and institutional buildings. Manufacture lock cases from fully wrapped, heavy 12 gage steel with a protected leading edge and screw configuration that limits access to operating parts. Lock components to be manufactured of zinc dichromate plated steel. Latch bolts to have a standard 70mm (2 3/4") backset with a full 19mm (3/4") throw. Latchbolts to be non-handed, field reversible without opening the lock case. Latchbolts to be 2-piece anti-friction, manufactured from stainless steel. Solid latchbolts and/or plastic anti-friction devices are not acceptable. Deadbolts to be 45mm (1 3/4") total length have standard 25mm (1") throw with a minimum 19mm (3/4") internal engagement when fully retracted. Deadbolts to be constructed of stainless steel, incorporating a security roller pin with a minimum Rc60 rating for surface hardness. Lever assembly (external) to be one-piece design attached by threaded bushing. Lever assembly (internal) to be attached by screw less shank. Lever attachments by common tools (allen nuts and/or set screws) are not acceptable. Thru bolt lever assemblies through the door for positive interlock. Levers to have independent rotation in both directions. Lever operation to be freewheeling (clutch) when in the locked mode. Spring cages are to be incorporated into the lever assemblies. Hub blocking plate to be solid, cast stainless steel. Manufacturers utilizing open hub designs are not acceptable. Spindles to be independent, designed to "break away" at a maximum of 75psi torque. Mounting tabs are to be automatic self-adjusting, vertically and horizontally for door bevel and strike alignment. Cylinders to be secured by a cast stainless steel, dual retainer. Manufacturers utilizing screws and/or stamped retainers are not acceptable.

Supply as Specified: Schlage "L" series

#### **Tubular:**

Tubular locks with standard 70mm (2 3/4") backset with 13mm (1/2") latch throw, 65 mm (2-9/16") standard rose, 67mm (2-5/8") optional rose size. Provide levers with solid

## SECTION 08 71 00-FINISH HARDWARE

brass/bronze, stainless steel cast or forged in design specified with wrought roses and external spring cages, through bolted levers with two-piece spindles. Provide locksets with 60mm backset option. Provide latch throw to meet 20 minutes cUL listing. Privacy functions to have self-cancelling egress/non lockout function. Provide locksets for 38mm (1-3/8") to 45mm (1-3/4") thick doors with an option for 51mm (2") door thickness. Provide standard "T" strikes unless extended lip strikes are necessary to protect trim.

Supply as Specified: Schlage "LT" series

### **Keypad Locks-Stand Alone Battery Operated:**

#### **Cylindrical:**

Heavy-duty cylindrical type with standard 13mm (1/2") throw latch bolt with chassis that will accommodate standard 161 cylindrical lock prep. Locksets shall be provided from the factory with the appropriate handing. Outside escutcheon to contain a 12-button keypad to support 500 user capacity with tri-coloured LED's and audible indicators to provide information on activation, operational system status, system error conditions and low power conditions. Electrical operation to be battery operated capable of 80,000 operating cycles using four non-proprietary "AA" alkaline batteries. Keypad lock to be capable of operation for exterior applications, operating temperature -35 to 66 degrees Celsius.

Supply as Specified: Schlage Electronics CO-100CY series

Kit

### **.3 Door Closers:**

Door closers to have the following features (see separate closer sections below for further information):

- Fully hydraulic, rack and pinion action with high strength cast iron cylinders and one-piece forged steel pistons.
- Include high efficiency, low friction pinion bearings.
- Hydraulic fluid of a type requires no seasonal adjustments, ULTRA X TM fluid has constant temperature control from -35 degrees Celsius to +49 degrees Celsius.
- Hydraulic regulation controlled by tamper-proof, non-critical screw valves, adjustable with a hex wrench.
- Separate adjustments for backcheck, general speed and latch speed.
- Door closers with special template (ST-) numbers include required associated product, information sheets and instructions
- Size 1 manual door closers to provide less than 5 pounds opening force on a 900mm door leaf.
- Door closer with Pressure Relief Valves are not accepted.
- Door closer bodies, arms, covers to be powder coated
- Closers with powder coat finishes to exceed a minimum 100-hour salt spray test, as described in ANSI A156.18 and ASTM B117.
- Closers detailed with plated finishes to include plated covers (or finish plates), arms and visible fasteners.

#### **Medium Duty Mechanical (Interior/Exterior):**

Non-sized (1-6) and non-handed cylinder body to have 32mm (1 1/4") piston diameter with 16mm (5/8") single heat-treated shaft. Track closer cylinder body non-sized (2-4) or (1-2). Closers to have stamped main arm and forearm (forged steel main arm and forearm EDA and CUSH type arms). Optional arms to be interchangeable within the series of closers, except track arm type closers. Track arm type closers to have single lever arm with low

## SECTION 08 71 00-FINISH HARDWARE

friction track and roller assembly and provisions for an optional bumper to assist backcheck.

Supply as Specified: LCN1460 HD series

### **Heavy Duty Mechanical (Multiple Applications):**

Non-sized (1-6) and non-handed cast iron cylinder body to have 38mm (1 1/2") diameter with 19mm (3/4") journal double heat-treated pinion shaft with 16mm (5/8") full complement bearings. XP closer hydraulic regulation controlled by tamper-proof, non-critical screw valves, abrasion resistant Vitron "O" ring, adjustable with a hex wrench. Closer to have "FAST" Power Adjust speed dial to show spring size power. Track closers non-sized 1-4. Closers to have forged steel main arm and forearm (forged steel main arm and forearm EDA and CUSH type arms). Optional arms to be interchangeable within the series of closers, except track arm type closers. Track arm type closers to have single lever forged arm with low friction track and roller assembly and provisions for an optional bumper to assist backcheck.

Supply as Specified: LCN 4040XP series

### **"NOTE: LOW ENERGY OPERATORS SUPPLIED AND INSTALLED BY THIS SECTION"**

### **Heavy Duty Electric Operator**

Provide low energy automatic operator units that are electro-mechanical design. Powered by DC motor working through reduction gears. Spring force closing. Motor is off when door is in closing mode. Door can be manually operated with power on or off without damage to operator. Provide variable adjustments, including opening and closing speed adjustment. Provide units with manual off/auto/hold-open switch, push and go function to activate power operator, vestibule interface delay, electric lock delay, hold-open delay adjustable from 2 to 30 seconds, and logic terminal to interface with accessories, mats, and sensors. Provide full length aluminum header, drop plates, angle brackets, or adapters for arms to suit details. Sequence operation of exterior and vestibule doors with automatic operators to allow ingress or egress through both sets of openings, consult with owner.

Supply as Specified: LCN 9542, series c/w keyswitch or rocker 8310-806K/R

#### **.4 Actuators:**

### **Wall Type**

Wall plate switch to be hard-wired actuator with round, stainless steel touch plate in either 114mm (4-1/2") or 152mm (6") diameters. Engraved blue filled handicap symbol conforms to most accessibility codes. Units to include heavy grade components for vandal resistant mounting and weather resistant switch standard.

Supply as specified: LCN 8310-852 c/w 8310-876 (152mm) escutcheon

#### **.5 Overhead Door Stops/holders:**

### **Heavy Duty Surface Mounted:**

Surface overhead stops/holders to be stainless steel base, non-handed for single-acting doors with a heavy-duty channel/slide-arm design and offset jamb bracket to allow for

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simple field modifications of functions. Channel to be surface mounted to the door with thru bolts and the jamb bracket is surface mounted to the frame soffit.

Supply as Specified: Glynn-Johnson 90 series

### .6 Door Pulls/Flatware/Coat Hooks:

Door Pulls are to be 19mm (7/8"), 25mm (1") diameter  
Flatware to be of stainless-steel material, 1mm (.050 gauge).

Supply as Specified: 8103EZHD, 8145EZHD (Door Pull) mounting as indicated in the hardware sets.

Ives 8200 B-NH-A tape mounting for installation, sizes as specified in hardware groups  
Ives 8400 B-NH-A, tape mounting for installation (Kickplates 40mm (1-5/8") less door width single door and 25mm (1") less door width double doors)

### .7 Floor/Wall Stops:

#### Wall Stops (No Button on Locking Hardware):

Wall stops to be constructed of stainless-steel base with special retainer cup that makes the rubber stop tamper resistant. Convex design of rubber bumper.

Supply as Specified: Ives WS406/407CVX

#### Wall Stops (Projecting Button on Locking Hardware):

Wall stops to be constructed of stainless-steel base with special retainer cup that makes the rubber stop tamper resistant. Concave rubber bumper to avoid damage to locks with projecting buttons.

Supply as Specified: Ives WS406/407CCV

### .8 Weather/Smoke/Sound Seals:

Supply as Specified: Zero 429AA (head seal)  
Note: Mount head seal prior to soffit mounted hardware.  
Zero 328AA-S (jamb seal, head/jamb seal)  
Zero 188SBK (head/jamb seal)  
Zero 364AA (door bottom)

### .9 Thresholds/Weatherstrip/Door Sweeps:

Supply as Specified: Zero 8192AA (Door Sweep)  
Zero 626A-223(Threshold)  
Note: Threshold depth to suit site conditions  
(wall/frame/partition depth, overlap of floor finishes, floor grilles, etc.) Specified threshold indicated as basis for design purposes.

#### Molex Connectors:



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Where scheduled in the hardware sets, provide each item of electrified hardware and wire harnesses with sufficient number and wire gauge with standardized Molex plug connectors to accommodate electric function of specified hardware. Provide Molex connectors that plug directly into connectors from harnesses, electric locking and power transfer devices. Provide through-door wire harness for each electrified locking device installed in a door and wire harness for each electrified hinge, electrified continuous hinge, electrified pivot, and electric power transfer for connection to power supplies.

### Electric Washroom Accessories:

Provide electric washroom accessories to complete the installation of automatic door operators for universal and barrier free washroom requirements

Supply as Specified: Camden - Push to lock, CM-400/8  
 Camden – LED annunciator CM-AF500  
 Camden – Advanced Logic Relay CX-33  
 Camden – Emerg. Call Kit CX-WEC10

### 2.3 FINISHES

- .1 Unless otherwise specified, finishes to be brushed chrome (BHMA 626/652).

Finishes are specified as follows:

ITEM	BHMA#	DESCRIPTION	BASE MATERIAL
Hinges	630	satin stainless steel	stainless steel
Hinges	652	satin chrome plated	steel
Continuous Hinges	689	anodized aluminum	aluminum
Lock Trim	626	satin chrome plated	brass/bronze
Door Closer	689	powder coat aluminum	steel
Door Pulls	630	satin stainless steel	stainless steel
Protective Plate	630	satin stainless steel	stainless steel
Protective Plate	629	polished stainless steel	stainless steel
<b>Door Stops/holders</b>			
Overhead	630	satin stainless steel	stainless steel
Wall/Floor	626	satin chrome plated	brass/bronze
Thresholds	628	anodized aluminum	aluminum
Weatherstrip	628	anodized aluminum	Aluminum

### 2.4 CYLINDERS, KEYING SYSTEMS AND KEY CONTROL

- .1 Meet with the Owner to finalize keying requirements and obtain keying instructions in writing as outlined in Division 1. Interior locks and cylinders shall be furnished in a new Schlage master key system.
- .2 Provide temporary construction keying system during construction period. Permanent keys will be furnished to the Owner's Representative prior to occupancy. The Owner or Owner's Security Agent will void the operation of the construction keys.
- .3 Permanent cylinders to be keyed by factory, combined in sets or subsets, master keyed or great grand master keyed, as directed by Owner. Permanent keys, keyblanks and cylinders are to be stamped with the keyset symbol for identification. Stamp cylinders with concealed visual keying for added security. These visual key control marks or codes will not include the actual key cuts.
- .4 Deliver permanent key blanks and cylinders and other security keys direct to Owner's

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representative (address noted on authorized Primus Level Three facesheet) from factory by secure courier, return receipt requested. Failure to properly comply with these requirements may be cause to require replacement of cylinders and keys involved as deemed necessary at no additional cost to the Owner.

- .5 Provide complete cross-index system, place keys on markers and hooks in the cabinet as determined by the final key schedule. Provide one each key cabinet, hinged panel type cabinet for wall mounting. See hardware groups for model number.

**Keying requirements to be confirmed by owner.**

### PART 3 – EXECUTION

#### 3.1 EXAMINATION

- .1 Ensure that doors and frames are prepared and reinforced to receive finish hardware prior to installation.
- .2 Ensure that door frames and finished floor are plumb and level to permit proper engagement and operation of hardware.
- .3 Verify power is run to door opening requiring electrified hardware.
- .4 Submit in writing a list of deficiencies determined as part of inspection required in 3.1.1 and 3.1.2 to supervising consultant prior to installation of finished hardware. Correct door frame installation before proceeding with finish hardware installation.

#### 3.2 INSTALLATION

- .1 Hardware Installers must have a minimum of five (5) years' experience in installation of hardware. Provide verification of installer's qualification to Consultant for approval. Installers to attend review meetings conducted by the hardware distributor.
- .2 Install hardware at mounting heights as specified in the manufacturer's templates or specific references in approved hardware schedule or approved elevation drawings.
- .3 Where mounting height is not otherwise specified, install hardware at mounting heights as indicated in 1.4.1, 1.4.2.
- .4 Install hardware using only manufacturer supplied and approved fasteners in strict adherence with manufacturers published installation instructions.
- .5 Ensure locksets / latchsets / deadlocks are of the correct hand before installation to ensure that the cylinder is in the correct position. **Handing is part of installation procedure.**
- .6 Ensure that exit devices are of the correct hand and adjust device cam/drive screw for proper outside trim function prior to installation. Handing is part of installation procedure.
- .7 Follow manufactures installation instructions. Adjustment of door closers is inclusive of spring power, closing speed, latching speed and back-check, valve screws to achieve backcheck (4040, 4040XP series) at the time of installation.
- .8 Adjust delayed action door closers to forty (40) second delay for barrier free accessibility and movement of materials. Time period to be approved by Owner.

## SECTION 08 71 00-FINISH HARDWARE

- .9 Install head seal weatherstrip prior to installation of soffit mounted hardware. Trim cut and notch thresholds and saddles neatly to minimally fit the profile of the door frame. Install thresholds and saddles in a bed of caulking completely sealing the underside from water and air penetration.
- .10 Counter sink through bolt of door pull under push plate during installation.
- .11 Install blocking material in cavities of metal and wood stud walls and partitions. Located concave and convex type door bumpers at the appropriate height to properly contact protruding door trim.
- .12 .

### 3.3 FIELD QUALITY CONTROL

- .1 Verify each door leaf opens closes and latches. Inspect fire rated openings to ensure they are installed in compliance with NFPA 80 requirements. Test access control system and electrified hardware devices for proper operation with owner to sign off on verification of operation. Verify electric door release hardware operates to close the door upon activation of the fire alarm system.
- .2 Perform bi-monthly on-site inspections during hardware installation and provide inspection reports listing progress of work, unacceptable work and corrective measures. Repair or replace as directed by the Consultant.
- .3 Before completion of the work but after the hardware has been installed, submit a certificate to the Consultant stating that final inspection has been made and that hardware has been checked for installation and operation.

### 3.4 ADJUSTING AND CLEANING

- .1 Check and make final adjustments to each operating item of hardware on each door to ensure proper operation and function.
- .2 Adjust doors with self-closing devices or automatic closing devices for operation after the HVAC system is balanced and adjusted. Adjust spring power of non sized door closers to close and latch the door.
- .3 Hardware to be left clean and free of disfigurements.
- .4 Instruct owner personnel in the operation, adjustment and maintenance of hardware.
- .5 Check locked doors against approved keying schedule.

### 3.5 PROTECTION

- .1 Protect hardware from damage during construction. Wrap locks, panic hardware, and fire exit hardware, door pull trim with kraft paper or plastic bubble materials to protect finish from damage until date of substantial completion. Remove and reinstall or where necessary, use temporary hardware to maintain finish in new condition and maintain manufacturer's warranty.

### 3.6 HARDWARE GROUPS

END

## St. Lawrence Co-Operative Daycare Interior Alterations

Door#	HwSet#
D1	01
D2	02
D3	02
D4	01
D5	02
D6	02
D7	03
D8	04
D9 ✎	05
D10	06
D11	06
D12	06
D13	01
D14	02
D15	02
D16	01
D17	02
D18	02
D19	03
D20	03
D21	07
D22	07
D23 ✎	08
D24	09
D25	10
D26	10
D27	11

# St. Lawrence Co-Operative Daycare Interior Alterations

Hardware Group No. 01

For use on Door #(s):

D1                      D4                      D13                      D16

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1SC 4.5	652	IVE
1	EA	CORRIDOR LOCK	L9456P 06B 09-544	630	SCH
1	EA	KICK PLATE	8400 8" X LDW	630	IVE
1	EA	KICK DOWN HOLDER	FS452-4	626	IVE
1	EA	WALL STOP	WS406/407CVX	626	IVE
1	EA	HARDWARE	BALANCE OF HARDWARE TO REMAIN		

D21, D22,D23,D24

Hardware Group No. 02

For use on Door #(s):

D2                      D3                      D5                      D6                      D14                      D15  
D17                      D18

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	HINGE	5BB1 5 X 4.5	652	IVE
1	EA	Side-Pull Magnetic Safety Gate Latch	PGLM90	626	RIC
1	EA	DOOR STOP	69	652	IVE

Hardware Group No. 03

For use on Door #(s):

D7                      D19                      D20

Provide each FLD door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	BI-FOLD	C-515 (COMPLETE KIT 4 DOORS)		KNC
6	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
2	EA	FLUSH BOLT	1877 TOP (12INCH)	626	ADA
2	EA	THUMBTURN	4066	689	ADA
2	EA	FLUSH PULL	950	626	IVE

# St. Lawrence Co-Operative Daycare Interior Alterations

Hardware Group No. 04

For use on Door #(s):

D8

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 5 X 4.5	652	IVE
1	EA	PASSAGE SET	ALX10 RHO	626	SCH
1	EA	SURFACE CLOSER	4040XP EDA	689	LCN
1	EA	KICK PLATE	8400 8" X LDW	630	IVE
1	EA	WALL STOP	WS406/407CCV	626	IVE

Hardware Group No. 05

For use on Door #(s):

D9

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 5 X 4.5	652	IVE
1	EA	PUSH/PULL PLATE	CBH 380 4" X 16" CFC	613	CBH
1	EA	PUSH/PULL PLATE	CBH 380 4" X 16" CFC	613	CBH
1	EA	SGL CYL DEADBOLT	B660P6 12-631	626	SCH
1	EA	MONITOR STRIKE	LSM-1	630	SEC
1	EA	PULL PLATE	8302 6" 4" X 16" CFT	630	IVE
1	EA	MOUNTING PLATE	9530-18	689	LCN
1	EA	SURF. AUTO OPERATOR	9531 AS REQ (120/240 VAC)	ANCLR	LCN
1	EA	KEYSWITCH	8310-806K	BLK	LCN
2	EA	ACTUATOR, TOUCH	8310-852	630	LCN
2	EA	ESCUTCHEON	8310-876	630	LCN
1	EA	KICK PLATE	8400 8" X LDW	630	IVE
1	EA	WALL STOP	WS406/407CCV	626	IVE

Hardware Group No. 06

For use on Door #(s):

D10

D11

D12

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	TURN X TURN DEADBOLT	D251	626	FAL
2	EA	TURN, INSIDE ONLY	D261	626	FAL
1	EA	HARDWARE	BALANCE OF HARDWARE TO REMAIN		

# St. Lawrence Co-Operative Daycare Interior Alterations

Hardware Group No. 07

For use on Door #(s):

D21                      D22

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1SC 4.5	652	IVE
1	EA	KICK PLATE	8400 8" X LDW	630	IVE
1	EA	HARDWARE	BALANCE OF HARDWARE TO REMAIN		

D21, D22,D23,D24

Hardware Group No. 08

For use on Door #(s):

D23

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4	652	IVE
1	EA	ELEC CLASSROOM LOCK	CO-100-CY-70-KP-RHO-P6 4B BATTERY OPERATED	626	SCE
1	EA	SURFACE CLOSER	1461	693	LCN
1	EA	KICK PLATE	8400 8" X LDW	630	IVE
1	EA	KICK DOWN HOLDER	FS452-4	626	IVE
1	EA	WALL STOP	WS406/407CVX	626	IVE

Hardware Group No. 09

For use on Door #(s):

D24

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	KICK PLATE	8400 8" X LDW	630	IVE
1	EA	KICK DOWN HOLDER	FS452-4	626	IVE
1	EA	HARDWARE	BALANCE OF HARDWARE TO REMAIN		

Hardware Group No. 10

For use on Door #(s):

D25                      D26

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4 NRP	652	IVE
1	EA	HOSPITAL PRIVACY W/ OUTSIDE INDICATOR	ND44S RHO OS-OCC	626	SCH
1	EA	OH STOP	90S	630	GLY
1	EA	KICK PLATE	8400 8" X LDW	630	IVE

# St. Lawrence Co-Operative Daycare Interior Alterations

Hardware Group No. 11

For use on Door #(s):

D27

Provide each SGL door(s) with the following:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	HARDWARE	ALL HARDWARE TO REMAIN		UNK



## **PART 1 GENERAL**

### **1.1 GENERAL INSTRUCTIONS**

- 1.1.1 Read and conform to: The general provisions of the Contract, including General and Supplementary Conditions; and the requirements of Division 01 Specifications and any additional documents referred to in this Section.
- 1.1.2 Contractor is solely responsible for dividing the Work among Subcontractors and Suppliers. Consultant and Owner assume no responsibility to act as arbiters or to establish subcontract limits between Sections or Divisions of the Work. Any references to related work items contained in this Section are provided for convenience only

### **1.2 SUMMARY**

- 1.2.1 Provide labour, materials, Products, equipment and services to complete the general requirements for glass and glazing work specified herein.
- 1.2.2 Related Requirements: Specifications throughout all Divisions of the Project shall be read as a whole, and may be directly applicable to this Section. Related requirements provided below are for convenience purposes only:
  - 1.2.2.1 Section 08 81 26 – Interior Glass and Glazing Requirements

### **1.3 REFERENCES**

- 1.3.1 Reference Standards: Unless otherwise indicated in this Section or the Building Code, the latest published editions of reference standards as of the Project's Bid Closing deadline apply.

### **1.4 PREINSTALLATION MEETINGS**

- 1.4.1 Project Meetings, generally: in accordance with Section 01 31 00, Project Management and Coordination.
- 1.4.2 Pre-installation Meetings: Schedule and hold a pre-installation meeting at the Project site at least one week before beginning work on this Section to coordinate activities with related Subcontractors.
  - 1.4.2.1 Required Attendance: Subcontractor performing work of this Section, representatives from manufacturers and fabricators involved in or affected by installation.
  - 1.4.2.2 Notification: Notify Consultant and Owner of scheduled meeting dates in advance; minimum 72 hour notice required.
  - 1.4.2.3 Agenda:
    - .1 Review progress of related construction activities and preparations for particular activity under consideration.
    - .2 Make note of required sequencing and coordination with materials and activities that have preceded or will follow.
  - 1.4.2.4 Reporting: Record significant discussions, agreements, and disagreements, including required corrective measures and actions.

- 1.4.2.5 Distribution: Distribute minutes of the meeting to each party present and to other parties requiring information not more than 72 hours after meeting.

## 1.5 SUBMITTALS

- 1.5.1 Submittals, generally: in accordance with Section 01 33 00, Submittal Procedures.
- 1.5.2 Product Data: Submit manufacturer's product characteristics, catalogue cuts, installation instructions and other relevant information for each material and product used for general requirements for glass and glazing work specified in this Section.
- 1.5.3 Shop Drawings: Submit Shop Drawings indicating material layouts, details of construction, connections, and relationship with adjacent construction. As a minimum indicate following:
  - 1.5.3.1 Include plans, elevations, sections and details as applicable.
  - 1.5.3.2 Indicate field-measured dimensions on Shop Drawings.
- 1.5.4 Delegated Design Submittals:
  - 1.5.4.1 Engineering design completion of general requirements for glass and glazing work is delegated to Contractor based on structural design criteria indicated in Contract Documents.
  - 1.5.4.2 Submit Shop Drawings for work of this Section that bear the stamp of a Professional Engineer registered in Province of Ontario.
  - 1.5.4.3 Submit copy of structural calculations upon request by Consultant.
- 1.5.5 Material Ingredient Disclosure: When available, submit documentation disclosing chemical inventory of materials to at least 0.1% (1000ppm) meeting following criteria:
  - 1.5.5.1 Standard: Health Product Declaration (HPD) Open Standard, Cradle to Cradle v2 (Basic level) or Cradle to Cradle v3 (Bronze level), International Living Future Institute (ILFI) Declare, or other approved material ingredient declaration framework.
  - 1.5.5.2 Product Options: Give preference to Products with compliant documentation when choice is at Contractor's option.
- 1.5.6 Low-Emitting Materials: For applicable Products specified or used for activities of this Section (i.e., site-applied coatings, adhesives, and sealants), submit certifications from third-party organizations indicating compliance with following:
  - 1.5.6.1 VOC Emissions: California Department of Public Health (CDPH) Standard Method v1.2–2017, using applicable exposure scenario.
  - 1.5.6.2 VOC Content: SCAQMD Rule 1113 (for paints and coatings) and SCAQMD Rule 1168 (for adhesives and sealants).

## 1.6 CLOSEOUT SUBMITTALS

- 1.6.1 Closeout Submittals, generally: in accordance with Section 01 78 00, Closeout Submittals.

- 1.6.2 Operating and Maintenance Data: Submit care and maintenance instructions for general requirements for glass and glazing to be included in building operation and maintenance manual.
- 1.6.3 Warranty Documentation: Submit copy of extended warranties specified in this Section.

## 1.7 QUALITY ASSURANCE

- 1.7.1 Manufacturer Qualifications: Provide Products for work of this Section by manufacturer with at least 10 years' experience manufacturing such materials.
- 1.7.2 Installer Qualifications: Engage an entity with at least five years' experience installing, erecting, or assembling work similar in material, design, and extent to that shown on Drawings and Schedules, and whose work has resulted in construction with a track record of successful in-service performance.
- 1.7.3 Professional Engineer's Qualifications: Employ Professional Engineer licensed to practice in Province of Ontario who carries professional liability insurance and has at least five years' experience providing engineering services of similar kind, scope, and complexity.
  - 1.7.3.1 Professional Engineer's Responsibility:
    - .1 production and review of Shop Drawings,
    - .2 design and certification of general requirements for glass and glazing, including attachments for building construction, in accordance with applicable codes and regulations,
    - .3 stamping and signing of each Shop Drawing and associated calculations
- 1.7.4 Single Source Responsibility: Obtain primary materials for this Section from a single source by a single manufacturer, and secondary materials from sources recommended by manufacturers of primary materials.

## 1.8 DELIVERY, STORAGE AND HANDLING

- 1.8.1 Product Requirements, generally: in accordance with Section 01 61 00, Common Product Requirements.
- 1.8.2 Deliver, store and handle glass and glazing materials in accordance with manufacturer's written instructions.
- 1.8.3 Deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- 1.8.4 Store materials in off-ground, in clean, dry, well-ventilated area.
- 1.8.5 Replace defective or damaged materials with new.
- 1.8.6 Comply with insulating-glass manufacturer's written recommendations for venting and sealing units to avoid hermetic seal ruptures due to altitude change.

## 1.9 FIELD CONDITIONS

- 1.9.1 Environmental Restrictions: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material

manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.

- 1.9.2 Field Measurements: Verify actual dimensions of construction contiguous with general requirements for glass and glazing by field measurements before fabrication.
- 1.9.3 Do not install glazing sealants when ambient and substrate temperature conditions are outside limits permitted by sealant manufacturer or below 7 deg C (44 deg F).

## 1.10 WARRANTY

- 1.10.1 Refer to Section 08 81 26 for interior glass and glazing requirements.

## PART 2 PRODUCTS

### 2.1 PERFORMANCE / DESIGN CRITERIA

- 2.1.1 Glass Thickness and Strength:
  - 2.1.1.1 Unless indicated otherwise, Provide minimum 6 mm (1/4 inch) thick glass. Increase glass thicknesses as required to meet project-specific loading requirements based on engineering design.
  - 2.1.1.2 Unless otherwise indicated, Provide fully tempered glass or heat-strengthened glass, Kind FT or Kind H complying with ASTM C1048 or equivalent to CAN/CGSB 12.1-M; complying with testing requirements in ANSI Z97.1, Class A and 16 CFR 1201 for Category II materials. Annealed glass used without heat-strengthening is not acceptable.
    - .1 Heat-Soaking: Provide in-line heat soaking of tempered glass in accordance with BS EN 14179 (2 hour dwell at 290°C±10°C) for glass used in following applications:
      - .1 Where required by the Ontario Building Code (Supplementary Standard SB-13)
      - .2 Statistical heat-soaking is not acceptable.
  - 2.1.1.3 Glass thicknesses and heat treatments indicated in Contract Documents are minimum requirements. Confirm glass thicknesses and heat treatments, verified by analysis and engineering design, as required to meet performance and testing requirements specified in this Section.
  - 2.1.1.4 Glazing details shown are for convenience of detailing only and are to be confirmed relative to cited standards and final framing details.
  - 2.1.1.5 Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other

- 2.1.2 Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.
- 2.1.3 Visibility of Glazing: Unless design is specifically indicated on Drawings, provide films on all fully glazed transparent doors, sidelights and panels that are mullion-less as follows:
  - 2.1.3.1 Minimum height: 50 mm (2 inches)
  - 2.1.3.2 Extent: full width of the door, sidelight or panel.
  - 2.1.3.3 Placement: between 1350 mm (53 inches) and 1500 mm (60 inches) above the floor. Provide consistent placement height throughout project.
- 2.1.4 VOC Content and Emissions:
  - 2.1.4.1 VOC Emissions: For applicable items in this Section, comply with CDPH Standard Method v1.2–2017 (CA Spec 01350) and ensure products are certified per UL 2818, SCS Global Gold, or equivalent.
  - 2.1.4.2 VOC Content Requirements: Wet-applied materials used in scope of this Section must conform to the following:
    - .1 Paints and Coatings: SCAQMD Rule 1113 or CARB SCM.
    - .2 Adhesives and Sealants: SCAQMD Rule 1168.
    - .3 Methylene chloride and perchloroethylene must not be intentionally added in paints, coatings, adhesives, or sealants.

## 2.2 BASIC GLASS MATERIALS

- 2.2.1 Tempered Glass: ASTM C1048 Type I; Quality-Q3; Class I (clear); Kind FT or equivalent to CAN/CGSB-12.1. Perform heat strengthening using horizontal tong free method; surface compression not less than 69 MPa (10,000 psi). Glazing must comply with testing requirements in 16 CFR 1201 for Category II materials.
- 2.2.2 Fire-Rated Glass: to CAN/ULC S104 for door assemblies and CAN/ULC S106 for window assemblies.
  - 2.2.2.1 Film-Faced Ceramic Glazing: Clear, ceramic flat glass; 5-mm (3/16-inch) nominal thickness; faced on one surface with a clear glazing film; complying with testing requirements in 16 CFR 1201 for Category II materials (safety glazing).
  - 2.2.2.2 Laminated Ceramic Glazing: Laminated glass made from 2 plies of clear, ceramic flat glass; 8-mm (5/16-inch) total nominal thickness; complying with testing requirements in 16 CFR 1201 for Category II materials (safety glazing).
  - 2.2.2.3 Fire-Resistive Glass: Laminated glass made from multiple plies of uncoated, clear glass; with intumescent interlayers or fully transparent, heat-absorbing gel; complying with testing requirements in 16 CFR 1201 for Category II materials (safety glazing).
  - 2.2.2.4 Wire Glass: Not permitted.
- 2.2.3 Mirrors : ASTM C1503, or equivalent to CAN/CGSB-12.5; manufactured using copper-free, low-lead mirror coating process. Provide Mirror Select Quality; annealed glass with film backing as specified.

## 2.3 GLAZING GASKETS

- 2.3.1 Dense Compression Gaskets (aluminum framing): Molded or extruded gaskets of profile and hardness required to maintain watertight seal, made from one of the following:
- 2.3.1.1 EPDM complying with ASTM C864.
  - 2.3.1.2 Silicone complying with ASTM C1115.
  - 2.3.1.3 Acceptable Products: "VISIONstrip" by Tremco or approved equivalent.
- 2.3.2 Soft Compression Gaskets: Extruded or molded, closed-cell, integral-skinned EPDM or silicone gaskets complying with ASTM C509, Type II, black; of profile and hardness required to maintain watertight seal.
- 2.3.2.1 Application: Use where soft compression gaskets will be compressed by inserting dense compression gaskets on opposite side of glazing or pressure applied by means of pressure-glazing stops on opposite side of glazing.
- 2.3.3 At fire-rated glazed doors and partitions, use similar sized fire-rated silicone as recommended by fire-rated glass manufacturer and identical to Product used in test assembly to obtain rating.

## 2.4 GLAZING SEALANTS

- 2.4.1 General:
- 2.4.1.1 Compatibility: Provide glazing sealants that are compatible with one another and with other materials they will contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
  - 2.4.1.2 Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated on Drawings and Schedules and for conditions existing at time of installation.
  - 2.4.1.3 Sealants used inside the weatherproofing system shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
  - 2.4.1.4 Colours of Exposed Glazing Sealants: As selected by Consultant from manufacturer's full range.
- 2.4.2 Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C920, Type S, Grade NS, Class 50, Use NT.
- 2.4.2.1 Acceptable Products:
    - .1 "DOWSIL 795 or DOWSIL 995" by Dow Chemical of Canada ULC
    - .2 "SilGlaze II SCS2800 or SilPruf NB SCS9000 or SilPruf SCS2000 or UltraPruf II SCS2900" by GE Advanced Materials - Silicones
    - .3 "864" or "895" or "898" by Pecora Corporation

- .4 "SikaSil-C995" by Sika Corporation, Construction Products Division
- .5 "Spectrem 2" or "Spectrem 3" by Tremco Incorporated
- 2.4.2.2 Applications: Interior structural glazing applications.
- 2.4.3 Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C920, Type S, Grade NS, Class 25, Use NT.
  - 2.4.3.1 Acceptable Products:
    - .1 "Dowsil 799" by Dow Chemical of Canada ULC
    - .2 "UltraGlaze SSG4000" or "UltraGlaze SSG4000AC" by GE Advanced Materials - Silicones
    - .3 "Tremsil 200" by Tremco Incorporated
  - 2.4.3.2 Applications: Non-structural sealing for butt-glazing in interior applications.
- 2.4.4 Glazing Sealants for Fire-Rated Glazing Acceptable Products: Products that are approved by testing agencies that listed and labeled fire-resistant glazing products with which they are used for applications and fire-protection ratings indicated on Drawings and Schedules.

## 2.5 GLAZING TAPES

- 2.5.1 Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C1281 and AAMA 800 for products indicated below:
  - 2.5.1.1 AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
  - 2.5.1.2 AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.
  - 2.5.1.3 Acceptable Products: "POLYshim II Tape" by Tremco or approved equivalent.

## 2.6 MISCELLANEOUS GLAZING MATERIALS

- 2.6.1 General: Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials for application indicated on Drawings and Schedules, and with a proven record of compatibility with surfaces contacted in installation.
- 2.6.2 Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.
- 2.6.3 Setting Blocks: Elastomeric EPDM material with a Shore, Type A durometer hardness of 85, plus or minus 5.
- 2.6.4 Spacers: Elastomeric EPDM blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated on Drawings and Schedules.

- 2.6.5 Edge Blocks: Elastomeric EPDM material of hardness needed to limit glass lateral movement (side walking).
- 2.6.6 Cylindrical Glazing Sealant Backing: ASTM C1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.
- 2.6.7 Perimeter Insulation for Fire-Resistive Glazing: Product that is approved by testing agency that listed and labeled fire-resistant glazing product with which it is used for application and fire-protection rating indicated on Drawings and Schedules.

## **2.7 FABRICATION**

- 2.7.1 General Glass Fabrication Requirements: ASTM C1036, Type I, Quality-Q3, Class I (clear) or equivalent to CAN/CGSB-12.2.
- 2.7.2 Fabricate glazing units in sizes required to fit openings indicated on Drawings and Schedules for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.
- 2.7.3 Clean-cut or flat-grind vertical edges of butt-glazed monolithic lites to produce square edges with slight chamfers at junctions of edges and faces.
- 2.7.4 Grind smooth and polish exposed glass edges and corners.

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- 3.1.1 Verify actual site conditions and location of adjacent materials prior to commencing work. Notify Consultant in writing of any conditions which would be detrimental to the installation. Commencement of work implies acceptance of previously completed work.
- 3.1.2 Examine framing, glazing channels, and stops, with Installer present, for compliance with the following:
  - 3.1.2.1 Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
  - 3.1.2.2 Presence and functioning of weep systems.
  - 3.1.2.3 Minimum required face and edge clearances.
  - 3.1.2.4 Effective sealing between joints of glass-framing members.
- 3.1.3 Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 PREPARATION**

- 3.2.1 Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.



### 3.3 INSTALLATION

- 3.3.1 Installation, generally: Install work of this Section in strict accordance with manufacturer's written installation instructions and reviewed Shop Drawings. Supplement manufacturer's installation instructions with additional installation requirements specified in this Section to produce specified work results.

### 3.4 GLAZING

- 3.4.1 Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated on Drawings and Schedules, including those in referenced glazing publications.
- 3.4.2 Adjust glazing channel dimensions as required by Project conditions during installation to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.
- 3.4.3 Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.
- 3.4.4 Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.
- 3.4.5 Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
- 3.4.6 Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- 3.4.7 Provide spacers for glass lites where length plus width is larger than 1270 mm (50 inches).
- 3.4.7.1 Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
- 3.4.7.2 Provide 3-mm (1/8-inch) minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.
- 3.4.8 Provide edge blocking where indicated on Drawings and Schedules or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.
- 3.4.9 Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.
- 3.4.10 Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.

- 3.4.11 Square cut wedge-shaped gaskets at corners and install gaskets in a manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended by gasket manufacturer.

### **3.5 TAPE GLAZING**

- 3.5.1 Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.
- 3.5.2 Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.
- 3.5.3 Cover vertical framing joints by applying tapes to heads and sills first and then to jambs. Cover horizontal framing joints by applying tapes to jambs and then to heads and sills.
- 3.5.4 Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.
- 3.5.5 Do not remove release paper from tape until right before each glazing unit is installed.
- 3.5.6 Apply heel bead of elastomeric sealant.
- 3.5.7 Center glass lites in openings on setting blocks and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.
- 3.5.8 Apply cap bead of elastomeric sealant over exposed edge of tape.

### **3.6 GASKET GLAZING (DRY)**

- 3.6.1 Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.
- 3.6.2 Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.
- 3.6.3 Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
- 3.6.4 Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.
- 3.6.5 Install gaskets so they protrude past face of glazing stops.

### **3.7 SEALANT GLAZING (WET)**

- 3.7.1 Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.
- 3.7.2 Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.
- 3.7.3 Tool exposed surfaces of sealants to provide a substantial wash away from glass.

### **3.8 PROTECTION**

- 3.8.1 Protect glass and glazing from damage, soiling and contaminating substances resulting from construction activities or caused by work of other trades.
- 3.8.2 Where soiling or spills have occurred, remove spills and soiling from adjacent surfaces using cleaning procedures recommended in writing by affected material's manufacturer. Do not use materials or process that can damage finishes, surfaces, or construction.
- 3.8.3 Promptly replace glass and glazing work damaged during construction that cannot be satisfactorily repaired.

### **3.9 CLEANING AND WASTE MANAGEMENT**

- 3.9.1 Cleaning and Waste Management, generally: in accordance with Section 01 74 00, Cleaning and Waste Management
- 3.9.2 Cleaning: Maintain clean construction area at the end of each day. When activities of this Section are complete, remove materials, tools, equipment and rubbish.
- 3.9.3 Wash glass on both exposed surfaces in each area of Project not more than four days before date scheduled for inspections that establish date of Substantial Performance of the Work. Wash glass as recommended in writing by glass manufacturer.
- 3.9.4 Waste Management and Disposal: sort waste for reuse, recycling, or disposal, as specified. Remove recycling bins and containers from site and dispose of contents at the appropriate waste disposal facilities.

**END OF SECTION**

## **PART 1 GENERAL**

### **1.1 GENERAL INSTRUCTIONS**

- 1.1.1 Read and conform to: The general provisions of the Contract, including General and Supplementary Conditions; and the requirements of Division 01 Specifications and any additional documents referred to in this Section.
- 1.1.2 Contractor is solely responsible for dividing the Work among Subcontractors and Suppliers. Consultant and Owner assume no responsibility to act as arbiters or to establish subcontract limits between Sections or Divisions of the Work. Any references to related work items contained in this Section are provided for convenience only

### **1.2 SUMMARY**

- 1.2.1 Provide labour, materials, Products, equipment and services to complete the interior glass and glazing work specified herein. This includes, but is not necessarily limited, to:
  - 1.2.1.1 Glazing for interior applications including, but not limited to:
    - .1 swing doors, borrowed lites and screens.
    - .2 custom mirrors.
    - .3 architectural woodwork.
  - 1.2.1.2 Auxiliary materials required for a complete installation.
- 1.2.2 Related Requirements: Specifications throughout all Divisions of the Project shall be read as a whole, and may be directly applicable to this Section. Related requirements provided below are for convenience purposes only:
  - 1.2.2.1 Section 08 80 05 – General Requirements for Glass and Glazing

### **1.3 REFERENCES**

- 1.3.1 Reference Standards: Unless otherwise indicated in this Section or the Building Code, the latest published editions of reference standards as of the Project's Bid Closing deadline apply.

### **1.4 DEFINITIONS**

- 1.4.1 Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.
- 1.4.2 Glass Thicknesses: Indicated by thickness designations in millimeters according to ASTM C1036.
- 1.4.3 Glazing cavity: Space between lites of an air-gap unit.

### **1.5 PREINSTALLATION MEETINGS**

- 1.5.1 Project Meetings, generally: in accordance with Section 01 31 00, Project Management and Coordination.

- 1.5.2 Pre-installation Meetings: Schedule and hold a pre-installation meeting at the Project site at least one week before beginning work on this Section to coordinate activities with related Subcontractors.
  - 1.5.2.1 Required Attendance: Subcontractor performing work of this Section, representatives from manufacturers and fabricators involved in or affected by installation.
  - 1.5.2.2 Notification: Notify Consultant and Owner of scheduled meeting dates in advance; minimum 72 hour notice required.
  - 1.5.2.3 Agenda:
    - .1 Review progress of related construction activities and preparations for particular activity under consideration.
    - .2 Make note of required sequencing and coordination with materials and activities that have preceded or will follow.
  - 1.5.2.4 Reporting: Record significant discussions, agreements, and disagreements, including required corrective measures and actions.
  - 1.5.2.5 Distribution: Distribute minutes of the meeting to each party present and to other parties requiring information not more than 72 hours after meeting.

## 1.6 SUBMITTALS

- 1.6.1 Submittals, generally: in accordance with Section 01 33 00, Submittal Procedures.
- 1.6.2 Product Data: Submit manufacturer's product characteristics, catalogue cuts, installation instructions and other relevant information for each material and product used for interior glass and glazing work specified in this Section.
- 1.6.3 Shop Drawings: Submit Shop Drawings indicating material layouts, details of construction, connections, and relationship with adjacent construction. As a minimum indicate following:
  - 1.6.3.1 Include plans, elevations, sections and details as applicable.
  - 1.6.3.2 Indicate field-measured dimensions on Shop Drawings.
- 1.6.4 Embodied Carbon / Environmental Product Declarations (EPDs): When available, submit product-specific or industry-wide EPDs conforming to ISO 14025 or other recognized environmental Product declaration framework meeting following criteria:
  - 1.6.4.1 EPD Scope: Must cover Cradle-to-Gate (A1 to A3) as a minimum.
  - 1.6.4.2 EPD Impact Categories: Must report Global Warming Potential (GWP) in form of unit of kgCO<sub>2</sub>e/declared unit as a minimum.
  - 1.6.4.3 Product Options: Give preference to Products with compliant documentation when choice is at Contractor's option.
- 1.6.5 Low-Emitting Materials: For applicable Products specified or used for activities of this Section (i.e., site-applied coatings, adhesives, and sealants), submit certifications from third-party organizations indicating compliance with following:
  - 1.6.5.1 VOC Emissions: California Department of Public Health (CDPH) Standard Method v1.2–2017, using applicable exposure scenario.

1.6.5.2 VOC Content: SCAQMD Rule 1113 (for paints and coatings) and SCAQMD Rule 1168 (for adhesives and sealants).

1.6.6 Samples: Submit selection and verification samples for Products requiring colour, texture, or design selection. Submit manufacturer's list of finishes or colour swatches for Consultant's selection.

1.6.6.1 As a minimum submit samples of the following:

.1 Specialty and decorative glazing materials.

1.6.7 Glazing Schedule: Submit glazing schedule list of glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings and Schedules.

## 1.7 CLOSEOUT SUBMITTALS

1.7.1 Closeout Submittals, generally: in accordance with Section 01 78 00, Closeout Submittals.

1.7.2 Operating and Maintenance Data: Submit care and maintenance instructions for interior glass and glazing to be included in building operation and maintenance manual.

1.7.3 Warranty Documentation: Submit copy of extended warranties specified in this Section.

## 1.8 QUALITY ASSURANCE

1.8.1 Manufacturer Qualifications: Provide Products for work of this Section by manufacturer with at least 10 years' experience manufacturing such materials.

1.8.2 Installer Qualifications: Engage an entity with at least five years' experience installing, erecting, or assembling work similar in material, design, and extent to that shown on Drawings and Schedules, and whose work has resulted in construction with a track record of successful in-service performance.

1.8.3 Single Source Responsibility: Obtain primary materials for this Section from a single source by a single manufacturer, and secondary materials from sources recommended by manufacturers of primary materials.

## 1.9 DELIVERY, STORAGE AND HANDLING

1.9.1 Product Requirements, generally: in accordance with Section 01 61 00, Common Product Requirements.

1.9.2 Deliver, store and handle interior glass and glazing materials in accordance with manufacturer's written instructions.

1.9.3 Deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

1.9.4 Store materials in off-ground, in clean, dry, well-ventilated area.

1.9.5 Replace defective or damaged materials with new.

## 1.10 FIELD CONDITIONS

1.10.1 Environmental Restrictions: Do not deliver or install interior glass and glazing until building HVAC system is operational and will maintain temperature and

relative humidity levels equal to occupancy levels for remainder of construction period.

1.10.2 Field Measurements: Verify actual dimensions of construction contiguous with interior glass and glazing by field measurements before fabrication.

1.10.3 Do not install glazing sealants when ambient and substrate temperature conditions are outside limits permitted by sealant manufacturer or below 7 deg C (44 deg F).

## 1.11 WARRANTY

1.11.1 Extended warranty: Submit for Owner's review and acceptance, manufacturer's extended warranty in which manufacturer commits to repair or replace components of interior glass and glazing that fail within specified warranty period. Manufacturer's extended warranty is in addition to, and does not supersede, any other rights that Owner may have under Contract Documents.

1.11.1.1 Warranty Period: Not less than 5 years from date of Substantial Performance of The work.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

2.1.1 Provided requirements of Contract Documents are satisfied, the following manufacturers may supply Products for work this Section:

2.1.1.1 Glazing Sealant:

- .1 Dow Chemical of Canada ULC
- .2 GE Advanced Materials - Silicones
- .3 Pecora Corporation
- .4 Sika Corporation, Construction Products Division
- .5 Tremco Incorporated

2.1.2 Substitution Limitations: In accordance with requirements of Section 01 25 00, Substitution Procedures.

### 2.2 PERFORMANCE / DESIGN CRITERIA

2.2.1 Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.

2.2.2 VOC Content and Emissions:

2.2.2.1 VOC Emissions: For applicable items in this Section, comply with CDPH Standard Method v1.2-2017 (CA Spec 01350) and ensure products are certified per UL 2818, SCS Global Gold, or equivalent.

2.2.2.2 VOC Content Requirements: Wet-applied materials used in scope of this Section must conform to the following:

- .1 Paints and Coatings: SCAQMD Rule 1113 or CARB SCM.
- .2 Adhesives and Sealants: SCAQMD Rule 1168.

- .3 Methylene chloride and perchloroethylene must not be intentionally added in paints, coatings, adhesives, or sealants.

## 2.3 GLASS MATERIALS, GENERALLY

- 2.3.1 Refer to Section 08 80 05.

## 2.4 TEMPERED GLASS

- 2.4.1 ASTM C1048 Type I; Quality-Q3; Class I (clear); Kind FT or equivalent to CAN/CGSB-12.1. Perform heat strengthening using horizontal tong free method; surface compression not less than 69 MPa (10,000 psi). Glazing must comply with testing requirements in 16 CFR 1201 for Category II materials.
- 2.4.2 Thickness: not less than 6mm thick.

## 2.5 LAMINATED GLAZING

- 2.5.1 ASTM C1172, laminated glass unit with multiple plies of tempered glass as follows
- 2.5.2 Assembly Make Up:
  - 2.5.2.1 4.0 mm tempered glass
  - 2.5.2.2 Interlayer type: 0.762 mm (0.030 inch) PVB interlayer
  - 2.5.2.3 4.0 mm tempered glass
- 2.5.3 Nominal Unit Thickness: 8 mm thick
- 2.5.4 Install in frames with 25 mm (1") continuous edge bite if dry glazed or 19 mm (3/4" continuous edge bite if silicone glazed).

## 2.6 FRAMELESS MIRRORS AND CUSTOM MIRRORS

- 2.6.1 ASTM C1503, or equivalent to CAN/CGSB-12.5; manufactured using copper-free, low-lead mirror coating process. Provide Mirror Select Quality; annealed glass with film backing as specified herein.
- 2.6.2 Nominal Thickness: 6.0 mm.
- 2.6.3 Edge Treatment: Chamfered, polished.
- 2.6.4 Film Backing for Safety Mirrors: Film backing and pressure-sensitive adhesive; both compatible with mirror backing paint as certified by mirror manufacturer.
  - 2.6.4.1 Acceptable Products: "CRL Shatterproof Safety Tape for Mirrors" by CR Laurence or approved equivalent.
- 2.6.5 Top and Bottom Aluminum J-Channels: Aluminum extrusions with a return deep enough to produce a glazing channel to accommodate mirrors of thickness indicated on Drawings and Schedules and in lengths required to cover bottom and top edges of each mirror in a single piece.
  - 2.6.5.1 Bottom Trim: "CRL Standard "J" Channel" by C. R. Laurence Co., Inc. or approved equivalent.
  - 2.6.5.2 Top Trim: "CRL Deep "J" Channel" by C. R. Laurence Co., Inc. or approved equivalent.



## 2.7 GLAZING MATERIALS AND ACCESSORIES

- 2.7.1 Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials for application indicated on Drawings and Schedules, and with a proven record of compatibility with surfaces contacted in installation.
- 2.7.2 Refer to Section 08 80 05 for additional requirements.

## 2.8 FABRICATION

- 2.8.1 General Glass Fabrication Requirements: ASTM C1036, Type I, Quality-Q3, Class I (clear) or equivalent to CAN/CGSB-12.2.
- 2.8.2 Fabricate glazing units in sizes required to fit openings indicated on Drawings and Schedules for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.
- 2.8.3 Mirrors:
  - 2.8.3.1 Cutouts: Fabricate cutouts for notches and holes in mirrors without marring visible surfaces. Locate and size cutouts so they fit closely around penetrations in mirrors.
  - 2.8.3.2 Seal edges of mirrors with edge sealer after edge treatment to prevent chemical or atmospheric penetration of glass coating.
  - 2.8.3.3 Require mirror manufacturer to perform edge treatment and sealing in factory immediately after cutting to final sizes.
  - 2.8.3.4 Apply film backing with adhesive coating over mirror backing paint as recommended in writing by film-backing manufacturer to produce a surface free of bubbles, blisters, and other imperfections.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- 3.1.1 Verify actual site conditions and location of adjacent materials prior to commencing work. Notify Consultant in writing of any conditions which would be detrimental to the installation. Commencement of work implies acceptance of previously completed work.
- 3.1.2 Examine framing, glazing channels, and stops, with Installer present, for compliance with the following:
  - 3.1.2.1 Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
  - 3.1.2.2 Presence and functioning of weep systems.
  - 3.1.2.3 Minimum required face and edge clearances.
  - 3.1.2.4 Effective sealing between joints of glass-framing members.

### 3.2 PREPARATION

- 3.2.1 Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.
- 3.2.2 Examine glazing units to locate interior surfaces. Label or mark units as needed so that interior and interior surfaces are readily identifiable. Do not use materials that will leave visible marks in the completed work.

### 3.3 INSTALLATION

- 3.3.1 Installation, generally: Install work of this Section in strict accordance with manufacturer's written installation instructions and reviewed Shop Drawings. Supplement manufacturer's installation instructions with additional installation requirements specified in this Section to produce specified work results.
- 3.3.2 Refer to Section 08 80 05 as supplemented by requirements specified in this Section.

### 3.4 MIRROR INSTALLATION

- 3.4.1 Install mirrors to comply with mirror manufacturer's written instructions and with referenced GANA publications. Mount mirrors accurately in place in a manner that avoids distorting reflected images.
- 3.4.2 Provide a minimum air space of 3 mm (1/8 inch) between back of mirrors and mounting surface for air circulation between back of mirrors and face of mounting surface.
- 3.4.3 Wall-Mounted Mirrors: Install mirrors with mastic and mirror hardware. Attach mirror hardware securely to mounting surfaces with mechanical fasteners installed with anchors or inserts as applicable. Install fasteners so heads do not impose point loads on backs of mirrors.
  - 3.4.3.1 Install mastic as follows:
    - .1 Apply barrier coat to mirror backing where approved in writing by manufacturers of mirrors and backing material.
    - .2 Apply mastic to comply with mastic manufacturer's written instructions for coverage and to allow air circulation between back of mirrors and face of mounting surface.
    - .3 After mastic is applied, align mirrors and press into place while maintaining a minimum air space of 3 mm (1/8 inch) between back of mirrors and mounting surface.

### 3.5 PROTECTION

- 3.5.1 Protect interior glass and glazing from damage, soiling and contaminating substances resulting from construction activities or caused by work of other trades.
- 3.5.2 Where soiling or spills have occurred, remove spills and soiling from adjacent surfaces using cleaning procedures recommended in writing by affected material's manufacturer. Do not use materials or process that can damage finishes, surfaces, or construction.

- 3.5.3 Promptly replace interior glass and glazing work damaged during construction that cannot be satisfactorily repaired.

### **3.6 CLEANING AND WASTE MANAGEMENT**

- 3.6.1 Cleaning and Waste Management, generally: in accordance with Section 01 74 00, Cleaning Waste Management.
- 3.6.2 Cleaning: Maintain clean construction area at the end of each day. When activities of this Section are complete, remove materials, tools, equipment and rubbish.
- 3.6.3 Wash glass on both exposed surfaces in each area of Project not more than four days before date scheduled for inspections that establish date of Substantial Performance of the Work. Wash glass as recommended in writing by glass manufacturer.
- 3.6.4 Waste Management and Disposal: sort waste for reuse, recycling, or disposal, as specified. Remove recycling bins and containers from site and dispose of contents at the appropriate waste disposal facilities.

**END OF SECTION**

## PART 1 GENERAL

### 1.1 GENERAL INSTRUCTIONS

1.1.1 Read and conform to: The general provisions of the CCDC 2, 2008, including General and Supplementary Conditions; and the requirements of Division 01 Specifications and any additional documents referred to in this Section.

### 1.2 SUMMARY

1.2.1 Provide labour, materials, products, equipment and services to complete the GYPSUM BOARD ASSEMBLIES work specified herein. This includes, but is not necessarily limited, to:

- 1.2.1.1 Interior gypsum board.
- 1.2.1.2 Non-load-bearing steel framing.
- 1.2.1.3 Trim accessories.
- 1.2.1.4 Joint treatment materials.
- 1.2.1.5 Auxiliary materials.

1.2.2 Related Requirements: Specifications throughout all Divisions of the Project shall be read as a whole, and may be directly applicable to this Section.

1.2.2.1 Related requirements provided below are for convenience purposes only.

- .1 Section 09 91 23, Interior Painting for interior paint finishes.

### 1.3 REFERENCES

1.3.1 Reference Standards: Unless otherwise indicated in this Section or the Building Code, the latest published editions of reference standards as of the Project's Bid Closing deadline apply. Refer to 01 42 19 - Reference Standards.

### 1.4 DEFINITIONS

1.4.1 Steel Thickness:

- 1.4.1.1 Base Steel Thickness: Thickness of bare steel exclusive of coatings.
- 1.4.1.2 Design Thickness: Target or "nominal" thickness used to determine structural properties of the cold formed Products.
- 1.4.1.3 Minimum Thickness: Design thickness minus minimum allowable under-tolerance required by CSA S136 (95% of design thickness) or material specification; whichever is more stringent.
- 1.4.1.4 Designation Thickness: For the purposes of this specification; thicknesses provided will be minimum base steel thicknesses in accordance with CSA S136 and determined by the following table:

Designation Thickness	Minimum Base Steel Thickness		Gauge No. (For reference Only)	Colour
	(mils)	(in)		
18	0.0179	0.455	25	Not Painted

33	0.0329	0.836	20	White
43	0.0428	1.087	18	Yellow
54	0.0538	1.367	16	Green
68	0.0677	1.72	14	Orange

## 1.5 ADMINISTRATIVE REQUIREMENTS

### 1.5.1 Coordination:

1.5.1.1 Coordinate installation of anchorages and steel weld plates and angles for casting into concrete. Supply setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

1.5.2 Preinstallation Meetings: Conduct preinstallation meeting at Place of the Work prior to installation. Review requirements of Contract Documents and coordination requirements with other trades.

## 1.6 ACTION SUBMITTALS

1.6.1 Product Data: Submit product data in accordance with Division 01 for each type of product.

1.6.1.1 Submit manufacturer's instructions, printed product literature and data sheets for the GYPSUM BOARD ASSEMBLIES work and include product characteristics, performance criteria, physical size, finish and limitations.

1.6.2 Samples: Submit samples in accordance with Division 01 for the following products:

1.6.2.1 Trim Accessories: Full-size Sample in 300-mm- (12-inch-) long length for each trim accessory indicated in Contract Documents.

## 1.7 QUALITY ASSURANCE

1.7.1 Steel Fabricator's Qualifications: Provide steel framing members from fabricator who can produce Products to meet requirements specified in this Section, and who is a member in good standing with the Canadian Sheet Steel Institute (CSSBI) or similar organization that provides verifiable code compliance program (e.g. Steel Framing Industry Association).

1.7.2 Mockups: Before beginning gypsum board installation, install mockups of at least 9 sq. m (100 sq. ft.) in surface area to demonstrate aesthetic effects and set quality standards for materials and execution.

1.7.2.1 Install mockups for the following:

.1 Each level of gypsum board finish in this Section for use in exposed locations.

.2 Each texture finish indicated.

1.7.2.2 Apply or install final decoration indicated, including painting and wallcoverings, on exposed surfaces for review of mockups.

- 1.7.2.3 Simulate finished lighting conditions for review of mockups.
- 1.7.2.4 Reviewed mockups may become part of the completed Work if undisturbed at time of Substantial Performance of the Work.

## 1.8 DELIVERY, STORAGE AND HANDLING

- 1.8.1 Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

## 1.9 FIELD CONDITIONS

- 1.9.1 Environmental Limitations: Comply with ASTM C840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.
- 1.9.2 Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.
- 1.9.3 Do not install panels that are wet, those that are moisture damaged, and those that are mould damaged.
  - 1.9.3.1 Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
  - 1.9.3.2 Indications that panels are mould damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- 2.1.1 Products from the following manufacturers may be acceptable for inclusion into The Work, provided they meet requirements of Contract Documents.
  - 2.1.1.1 Gypsum Board
    - .1 CertainTeed Corp.
    - .2 CGC Inc.
    - .3 Georgia-Pacific Gypsum LLC.
    - .4 Continental Building Products.
  - 2.1.1.2 Metal Framing:
    - .1 Bailey Metal Products
    - .2 CGC Inc.
    - .3 ClarkDietrich Building Systems
    - .4 Approved equivalent manufacturer who is a member in good standing with CSSBI

### 2.2 PERFORMANCE REQUIREMENTS

- 2.2.1 Fire-Resistance-Rated Assemblies: for fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated on

Drawings and Schedules according to CAN/ULC-S101 or equivalent to ASTM E119 by an independent testing agency.

- 2.2.2 STC-Rated Assemblies: for STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated on Drawings and Schedules according to ASTM E90 and classified according to ASTM E413 by an independent testing agency.
  - 2.2.2.1 Lightweight gypsum board is not permitted.
- 2.2.3 Moisture-resistant gypsum board: Provide moisture resistant gypsum board at all wet areas and washrooms..
- 2.2.4 Full-height partitions: Provide full-height partitions where noted on Drawings. As a minimum, Provide full height partitions at mechanical, electrical, and telecommunications rooms, stairs, chases and washrooms, fire-rated walls, private offices, conference rooms, and break rooms.
- 2.2.5 System Deflections: Ensure partition design can accommodate following loadings with deflection not exceeding L/240 in any direction:
  - 2.2.5.1 Minimum Lateral Load for Partitions: 0.24 kPA (5 psf)
  - 2.2.5.2 Minimum Lateral Load for Firewalls: 0.51 kPA (10 psf)
  - 2.2.5.3 Reduce deflection to L/360 for partitions where tile and similar brittle finishes are indicated to be installed.
  - 2.2.5.4 Increase stud gauges as required to accommodate deflections criteria noted in this Section.
- 2.2.6 Reinforcing: Provide in-wall reinforcing where required to support manufactured component items such as washroom accessories, casework/millwork, wall mounted equipment and similar items.

### 2.3 INTERIOR GYPSUM BOARD

- 2.3.1 Gypsum Wallboard (GB or GWB):
  - 2.3.1.1 Commercial-grade and fire-rated type: Type X to ASTM C1396/C 1396M.
    - .1 Thickness: 15.9 mm (5/8 inch).
    - .2 Height: refer to wall schedule on Drawings Long Edges: Tapered and featured (rounded or beveled) for prefilling.
    - .3 Acceptable Products:
      - .1 "ToughRock® Fireguard or Fireguard C" by Georgia-Pacific Canada, L.P.
      - .2 "Sheetrock Firecode or Firecode C Core" by CGC Inc.
      - .3 "Drywall Type X or Type C Gypsum Board" by CertainTeed Gypsum Canada Inc.
  - 2.3.2 Moisture- and Mould-Resistant Gypsum Board (GB-MR or MRGB) – Paper-Faced: ASTM C1396/C 1396M. With moisture- and mould-resistant core and paper surfaces.
    - 2.3.2.1 Core: As indicate on Drawings.
    - 2.3.2.2 Long Edges: Tapered.

- 2.3.2.3 Mould Resistance: ASTM D3273, score of 10 as rated according to ASTM D3274.
- 2.3.2.4 Acceptable Products:
  - .1 "TougRock MoldGuard" by Georgia-Pacific Canada, L.P.,
  - .2 "M2Tech Moisture and Mould Resistant Board" by CertainTeed Gypsum, Canada Inc.
  - .3 "Sheetrock Mould Tough Interior Panel" by CGC Inc
- 2.3.3 Impact-Resistant Gypsum Board: ASTM C1629/C 1629M.
  - 2.3.3.1 Impact resistance characteristics:
    - .1 Minimum Surface Abrasion: Level 1;
    - .2 Minimum Surface Indentation: Level 1,
    - .3 Minimum Soft body impact: Level 2.
    - .4 Minimum Hard body impact: Level 2.
  - 2.3.3.2 Core: 15.9 mm (5/8 inch), Type X.
  - 2.3.3.3 Height: refer to wall schedule on Drawings
  - 2.3.3.4 Long Edges: Tapered.
  - 2.3.3.5 Mould Resistance: ASTM D3273, score of 10 as rated according to ASTM D3274.
  - 2.3.3.6 Acceptable Products:
    - .1 "DensArmour Plus Impact Resistant Wallboard" by Georgia-Pacific Canada, L.P.
    - .2 "USG Sheetrock® Brand Mold Tough® VHI Firecode® X " by CGC Inc.
    - .3 "Extreme Impact Resistant Gypsum Board" by CertainTeed Gypsum Canada Inc.

## 2.4 FRAMING SYSTEMS

- 2.4.1 Framing Members, General: Comply with ASTM C754 for conditions indicated on Drawings and Schedules.
  - 2.4.1.1 Steel Sheet Components: Comply with ASTM C645 requirements for metal unless otherwise indicated. Galvannealed products are not acceptable.
  - 2.4.1.2 Protective Coating: ASTM A653/A 653M, Z180 (G60), hot-dip galvanized unless otherwise indicated.
    - .1 Provide ASTM A653/A653M, G90 (Z275) in heavy moisture environments such as pools, showers and similar locations.
- 2.4.2 Studs and Runners: ASTM C645. Cold-formed galvanized-steel C-studs studs and runners or dimpled steel studs and runners.
  - 2.4.2.1 Steel Studs and Runners:
    - .1 Minimum Base-Metal Thickness: 0.45 mm (25 ga - 0.018 inch), unless otherwise indicated. Provide heavier thicknesses where



- required at unrestrained heights, to frame openings or for abuse/impact resistance requirements.
- .1 Where studs are supporting impact-resistant partitions, provide minimum 0.836 mm (20 ga - 0.032 inch).
  - .2 At framed openings, boxed studs.
  - .3 Where stud gauges are required to be increased for unrestrained heights, provide specialty high capacity studs as specified herein.
- .2 Ensure runners are of depth and base-metal thickness to match studs, unless indicated otherwise.
  - .3 Depth: As indicated on Drawings.
- 2.4.2.2 Specialty High Capacity Studs:
- .1 Cold-formed galvanized-steel C-studs as per ASTM C645 with minimum equivalent strength of 227 MPa (33 ksi) but acoustic characteristics equivalent to 0.45 mm (25 ga - 0.018 inch) studs.
  - .2 Ensure runners are of depth and base-metal thickness to match studs, unless indicated otherwise.
  - .3 Depth: As indicated on Drawings.
  - .4 Basis-of-Design: "B18 (Hard Board) Stud" by Bailey Metal Products or approved equivalent.
- 2.4.3 Slip-Type Head Joints: Where indicated on Drawings and Schedules as "deflection tracks", provide one of the following:
- 2.4.3.1 Deflection Track: Steel sheet top runner manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; in thickness not less than indicated on Drawings and Schedules for studs and in width to accommodate depth of studs.
- .1 Acceptable Products:
    - .1 "Multi-Slot Track complete with Bailey Top Deflection Clip (TDC)" by Bailey
    - .2 "Blazeframe DSL or MaxTrak Slotted Deflection Track" by Dietrich Metal Framing
    - .3 "VertiClip SLD or VertiTrack VTD Series" by Steel Network Inc. (The)
    - .4 "Vertical Slip Track or Vertical Slip Track II" by Telling Industries
    - .5 Approved equivalent.
- 2.4.4 Metal Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated on Drawings and Schedules.
- 2.4.4.1 Minimum Base-Metal Thickness: 1.37 mm (16 ga - 0.054 inch)
  - 2.4.4.2 Location: Provide for blocking and bracing as required for fixture attachment.
  - 2.4.4.3 Basis-of-Design: "Backer Plate" by Bailey or approved equivalent.

2.4.5 Cold-Rolled Channel Bridging: Steel, 0.836 mm (20 ga - 0.032 inch) minimum base-metal thickness, with minimum 13-mm- (1/2-inch-) wide flanges.

2.4.5.1 Depth: Manufacturer's standard but not less than **38 mm** (1-1/2 inches).

2.4.5.2 Location: As required for lateral bracing.

2.4.5.3 Basis-of-Design: "Spazzer 9200 Bridging and Spacing Bar" by ClarkDietrich Building Systems or approved equivalent.

2.4.6 Cold-Rolled Furring Channels: 1.34-mm (16 ga - 0.053-inch; Colour: Green) uncoated-steel thickness, with minimum 13-mm- (1/2-inch-) wide flanges.

2.4.6.1 Depth: As indicated on Drawings.

## 2.5 AUXILIARY MATERIALS

2.5.1 Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.

2.5.2 Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.

2.5.3 Fasteners for Steel Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.

2.5.4 Isolation Strip at Exterior Walls:

2.5.4.1 Foam Gasket: Adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 3.2 mm (1/8 inch) thick, in width to suit steel stud size.

## 2.6 ACCESSORIES

2.6.1 Interior Trim: ASTM C1047.

2.6.1.1 Material: Galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized steel sheet.

2.6.1.2 Shapes:

.1 Cornerbead.

.2 Bullnose bead.

.3 LC-Bead: J-shaped; exposed long flange receives joint compound.

.4 L-Bead: L-shaped; exposed long flange receives joint compound.

.5 U-Bead: J-shaped; exposed short flange does not receive joint compound.

.6 Expansion (control) joint.

.7 Curved-Edge Cornerbead: With notched or flexible flanges.

2.6.2 Aluminum Trim: Extruded accessories of profiles and dimensions indicated.

2.6.2.1 Aluminum: Alloy and temper with not less than the strength and durability properties of ASTM B221M (ASTM B221), Alloy 6063-T5.

2.6.2.2 Finish: Corrosion-resistant primer compatible with joint compound and finish materials specified.

- 2.6.2.3 Acceptable Manufacturers:
  - .1 Fry Reglet Corporation.
  - .2 Gordon, Inc.
  - .3 Pittcon Industries.

## 2.7 JOINT TREATMENT MATERIALS

- 2.7.1 General: Comply with ASTM C475/C 475M.
- 2.7.2 Joint Tape:
  - 2.7.2.1 Interior Gypsum Board: Paper.
- 2.7.3 Joint Compound for Interior Gypsum Board: for each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
  - 2.7.3.1 Prefilling: At open joints, rounded or beveled panel edges, and damaged surface areas, use setting-type taping compound.
  - 2.7.3.2 Embedding and First Coat: for embedding tape and first coat on joints, fasteners, and trim flanges, use drying-type, all-purpose compound.
    - .1 Use setting-type compound for installing paper-faced metal trim accessories.
  - 2.7.3.3 Fill Coat: for second coat, use drying-type, all-purpose compound.
  - 2.7.3.4 Finish Coat: for third coat, use drying-type, all-purpose compound.
  - 2.7.3.5 Skim Coat: for final coat of Level 5 finish, use drying-type, all-purpose compound or high-build interior coating product designed for application by airless sprayer and to be used instead of skim coat to produce Level 5 finish.

## 2.8 ACOUSTICAL COMPONENTS

- 2.8.1 Sound Attenuation Blankets: ASTM C665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.
  - 2.8.1.1 Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.
  - 2.8.1.2 One of the following types are acceptable:
    - .1 ROCKWOOL AFB @evo by Rockwool
- 2.8.2 Acoustical Joint Sealant: Manufacturer's standard nonsag, paintable, nonstaining latex sealant complying with ASTM C834. Product effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E90.
  - 2.8.2.1 Acceptable Products (gun-applied):
    - .1 "Smoke N Sound Acoustical Sealant" by Specified Technologies, Inc.
    - .2 "SHEETROCK Acoustical Sealant" by CGC Inc.
    - .3 "QuietZone Acoustic Sealant" by Owens-Corning Canada Inc.
    - .4 "Tremstop Acrylic Acoustical Sealant" by Tremco Ltd.

- .5 "SilentFX® Noise Proofing Sealant by CertainTeed Inc.
  - .6 "QuietSeal Pro" by Pabco Gypsum.
  - .7 "CP506 – Smoke and Acoustic Sealant" by Hilti (Canada) Limited
  - .8 "Tecsound CLG 5900" by Soprema Canada
- 2.8.2.2 Acceptable Products (sprayed-on):
- .1 "CP572 – Smoke and Acoustic Spray" by Hilti or approved equivalent.
- 2.8.3 Partition Closures at Mullions:
- 2.8.3.1 Pre-assembled and spring loaded partition closures, ASTM B221, extruded aluminum, Type 6063-T5, minimum (0.125") thick to provide a tight fit for vertical junctures of partitions and window and curtain walls.
  - 2.8.3.2 Mullion shall be filled with sound Absorbing Foam, Resistant to smoke, flame, and microbial growth (Fire Rating: ASTM E84 - Class A, Fungi Resistance: Zero rating per ASTM G21)
  - 2.8.3.3 Provide 8 mm (5/16") thick foam compressible to 6 mm (1/4"), between edge of extrusion and interior face of curtain wall glass. Provide larger thicknesses if required to accommodate larger mullion deflections.
  - 2.8.3.4 Sound Transmission:
    - .1 Single Sided Installations: STC 51 or better
    - .2 Double-Sided Installations: STC 57 or better
  - 2.8.3.5 Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.
  - 2.8.3.6 Acceptable products: 57 Classic Mullion Trim Cap By MULL-It-Over Products; Sound barrier mullion trim cap systems;  
[www.mullitoverproducts.com](http://www.mullitoverproducts.com)

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- 3.1.1 Gypsum Board Assemblies:
  - 3.1.1.1 Examine areas and substrates including welded hollow-metal frames and framing, with Installer present, for compliance with requirements and other conditions affecting performance.
  - 3.1.1.2 Examine panels before installation. Reject panels that are wet, moisture damaged, and mould damaged.

### **3.2 PREPARATION**

- 3.2.1 Suspended Assemblies: Coordinate installation of suspension systems with installation of overhead structure to ensure that inserts and other provisions for anchorages to building structure have been installed to receive hangers at spacing required to support the Work and that hangers will develop their full strength.

- 3.2.1.1 Furnish concrete inserts and other devices indicated to other trades for installation in advance of time needed for coordination and construction.

### 3.3 INSTALLING FRAMED ASSEMBLIES

- 3.3.1 Installation Standard: Comply with ASTM C754.
  - 3.3.1.1 Gypsum Board Assemblies: Also comply with requirements in ASTM C840 that apply to framing installation.
- 3.3.2 Install framing and accessories plumb, square, and true to line, with connections securely fastened.
- 3.3.3 Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.
- 3.3.4 Install bracing at terminations in assemblies.
- 3.3.5 Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.
- 3.3.6 Install framing system components in accordance with spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
  - 3.3.6.1 Single-Layer Application: As indicated on Drawings or required by horizontal deflection performance requirements unless otherwise indicated.
  - 3.3.6.2 Multilayer Application: As indicated on Drawings or required by horizontal deflection performance requirements unless otherwise indicated.
  - 3.3.6.3 Tile Backing Panels: As indicated on Drawings or required by horizontal deflection performance requirements unless otherwise indicated.
- 3.3.7 Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.
- 3.3.8 Install studs so flanges within framing system point in same direction.
- 3.3.9 Install tracks at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts that penetrate partitions above ceiling.
  - 3.3.9.1 Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.
  - 3.3.9.2 Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install track section (for cripple studs) at head and secure to jamb studs.
    - .1 Install two studs at each jamb unless otherwise indicated.

- .2 Install cripple studs at head adjacent to each jamb stud, with a minimum 13-mm (1/2-inch) clearance from jamb stud to allow for installation of control joint in finished assembly.
      - .3 Extend jamb studs through suspended ceilings and attach to underside of overhead structure.
    - 3.3.9.3 Other Framed Openings: Frame openings other than door openings the same as required for door openings unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
    - 3.3.9.4 Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.
      - .1 Firestop Track: Where indicated, install to maintain continuity of fire-resistance-rated assembly indicated.
    - 3.3.9.5 Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated.
    - 3.3.9.6 Curved Partitions:
      - .1 Bend track to uniform curve and locate straight lengths so they are tangent to arcs.
      - .2 Begin and end each arc with a stud, and space intermediate studs equally along arcs. On straight lengths of no fewer than two studs at ends of arcs, place studs 152 mm (6 inches) o.c.
  - 3.3.10 Direct Furring:
    - 3.3.10.1 Attach to concrete or masonry with stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 600 mm o.c.
  - 3.3.11 Z-Shaped Furring Members:
    - 3.3.11.1 Except at exterior corners, securely attach narrow flanges of furring members to wall with concrete stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 600 mm o.c.
    - 3.3.11.2 At exterior corners, attach wide flange of furring members to wall with short flange extending beyond corner; on adjacent wall surface, screw-attach short flange of furring channel to web of attached channel. At interior corners, space second member no more than 300 mm from corner and cut insulation to fit.
  - 3.3.12 Installation Tolerance: Install each framing member so fastening surfaces vary not more than 3 mm (1/8 inch) from the plane formed by faces of adjacent framing.

### 3.4 APPLYING AND FINISHING PANELS, GENERAL

- 3.4.1 Comply with ASTM C840.
- 3.4.2 Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

- 3.4.3 Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1.5 mm (1/16 inch) of open space between panels. Do not force into place.
- 3.4.4 Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.
- 3.4.5 Form control and expansion joints with space between edges of adjoining gypsum panels.
- 3.4.6 Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
  - 3.4.6.1 Unless concealed application is indicated on Drawings and Schedules or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 0.7 sq. m (8 sq. ft.) in area.
  - 3.4.6.2 Fit gypsum panels around ducts, pipes, and conduits.
  - 3.4.6.3 Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 6.4- to 9.5-mm- (1/4- to 3/8-inch-) wide joints to install sealant.
- 3.4.7 Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 6.4- to 12.7-mm- (1/4- to 1/2-inch-) wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- 3.4.8 Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.
- 3.4.9 STC-Rated Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C919 and with manufacturer's written recommendations for locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings.
- 3.4.10 Install sound attenuation blankets before installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

### **3.5 APPLYING INTERIOR GYPSUM BOARD**

- 3.5.1 Install interior gypsum board in the following locations:
  - 3.5.1.1 Regular Wallboard Type: Vertical surfaces unless otherwise indicated.
  - 3.5.1.2 Type X: Where required for fire-resistance-rated assembly and where noted on Drawings.
  - 3.5.1.3 Abuse-Resistant and Impact-Resistant Type: As indicated on Drawings.

- 3.5.1.4 Moisture- and Mould-Resistant Type: In wet locations, and for a minimum 1.2 m (4 ft) of a plumbing fixture and as indicated on Drawings. Provide tile backer where tile installation is scheduled.
- 3.5.2 Single-Layer Application:
  - 3.5.2.1 On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing unless otherwise indicated.
  - 3.5.2.2 On partitions/walls, apply gypsum panels horizontally (perpendicular to framing) unless otherwise indicated on Drawings and Schedules or required by fire-resistance-rated assembly, and minimize end joints.
    - .1 Stagger abutting end joints not less than one framing member in alternate courses of panels.
    - .2 Where ceiling height is greater than 2.46 m (8' – 1") or wall is 1220 mm (4 ft.) wide or less, install panels using parallel application (i.e. vertically) unless otherwise indicated on Drawings and Schedules or required by fire-resistance-rated assembly.
  - 3.5.2.3 On Z-furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.
  - 3.5.2.4 Fastening Methods: Apply gypsum panels to supports with steel drill screws.
- 3.5.3 Laminating to Substrate: Where gypsum panels are indicated on Drawings and Schedules as directly adhered to a substrate (other than studs, joists, furring members, or base layer of gypsum board), comply with gypsum board manufacturer's written recommendations and temporarily brace or fasten gypsum panels until fastening adhesive has set.

### 3.6 APPLYING TILE BACKING PANELS

- 3.6.1 Cementitious Backer Units: ANSI A108.11, where indicated on Drawings and Schedules locations indicated on Drawings and Schedules to receive tile.
- 3.6.2 Where tile backing panels abut other types of panels in same plane, shim surfaces to produce a uniform plane across panel surfaces.

### 3.7 INSTALLING TRIM ACCESSORIES

- 3.7.1 General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
- 3.7.2 Control Joints: Install control joints according to ASTM C840 and in specific locations approved by Consultant for visual effect.
- 3.7.3 Interior Trim: Install in the following locations:
  - 3.7.3.1 Cornerbead: Use at outside corners unless otherwise indicated on Drawings and Schedules.
  - 3.7.3.2 LC-Bead: Use at exposed panel edges.
  - 3.7.3.3 Curved-Edge Cornerbead: Use at curved openings.
- 3.7.4 Exterior Trim: Install in the following locations:



- 3.7.4.1 Cornerbead: Use at outside corners.
- 3.7.4.2 LC-Bead: Use at exposed panel edges.
- 3.7.5 Aluminum Trim: Install in locations indicated on Drawings.

### 3.8 FINISHING GYPSUM BOARD

- 3.8.1 General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.
- 3.8.2 Prefill open joints, rounded or beveled edges, and damaged surface areas.
- 3.8.3 Apply joint tape over gypsum board joints, except for trim products specifically indicated on Drawings and Schedules as not intended to receive tape.
- 3.8.4 Gypsum Board Finish Levels: Finish panels to levels indicated on Drawings and Schedules below and according to ASTM C840:
  - 3.8.4.1 Level 1: Ceiling plenum areas, concealed areas, and where indicated on Drawings and Schedules.
  - 3.8.4.2 Level 2: Panels that are substrate for tile.
  - 3.8.4.3 Level 4: At panel surfaces that will be exposed to view unless otherwise indicated on Drawings and Schedules .
  - 3.8.4.4 Level 5: Where indicated on Drawings and for following locations:
    - .1 Where epoxy paints or other gloss paints are scheduled to be installed,
    - .2 Where gypsum-applied films, wallcoverings and other finishes less than 4 mm (5/32 inch) thick are scheduled to be installed,
    - .3 Where fiberglass-mat gypsum products are scheduled to be installed.
- 3.8.5 Glass-Mat Gypsum Sheathing Board: Finish according to manufacturer's written instructions for use as exposed soffit board.
- 3.8.6 Glass-Mat Faced Panels: Finish according to manufacturer's written instructions.
- 3.8.7 Cementitious Backer Units: Finish according to manufacturer's written instructions.

### 3.9 PROTECTION

- 3.9.1 Protect adjacent surfaces from gypsum board compound and promptly remove from floors and other non-gypsum board surfaces. Repair surfaces stained, marred, or otherwise damaged during gypsum board application.
- 3.9.2 Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- 3.9.3 Remove and replace panels that are wet, moisture damaged, and mould damaged.
  - 3.9.3.1 Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.

- 3.9.3.2 Indications that panels are mould damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION

## **PART 1 GENERAL**

### **1.1 GENERAL INSTRUCTIONS**

- 1.1.1 Read and conform to: The general provisions of the Contract, including General and Supplementary Conditions; and the requirements of Division 01 Specifications and any additional documents referred to in this Section.

### **1.2 SUMMARY**

- 1.2.1 Provide labour, materials, products, equipment and services to complete the TILING work specified herein. This includes, but is not necessarily limited, to:
- 1.2.1.1 Tile materials,
  - 1.2.1.2 Trims and edging,
  - 1.2.1.3 Mortar, adhesive and grout materials,
- 1.2.2 Related Requirements: Specifications throughout all Divisions of the Project shall be read as a whole, and may be directly applicable to this Section.
- 1.2.2.1 Related requirements provided below are for convenience purposes only.
    - .1 Section 06 10 00 – Rough Carpentry
    - .2 Section 07 92 00 – Joint Sealers: for sealing of expansion, contraction, control, and isolation joints in tile surfaces.
    - .3 Section 09 21 16 – Gypsum Board Assemblies.

### **1.3 REFERENCES**

- 1.3.1 Reference Standards: Unless otherwise indicated in this Section or the Building Code, the latest published editions of reference standards as of the Project's Bid Closing deadline apply. Refer to 01 42 19 - Reference Standards.
- 1.3.2 Reference Standards:
- 1.3.2.1 ANSI/CTI A108.1 2012, Specification for the Installation of Ceramic Tile: Collection of 21 ANSI/CTI A108, A 118 and A136 Series of Standards on Tile Installations
  - 1.3.2.2 ANSI A326.3-2012, Specification for Ceramic Tile
  - 1.3.2.3 ASTM A82/A82M-07, Standard Specification for Steel Wire, Plain for Concrete Reinforcing
  - 1.3.2.4 ASTM A185/A185M-07, Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete
  - 1.3.2.5 ASTM C144-11, Standard Specification for Aggregate for Masonry Mortar
  - 1.3.2.6 ASTM C207 06 (2011), Standard Specification for Hydrated Lime for Masonry Purposes
  - 1.3.2.7 ASTM C373-88 (2006), Standard Test Method for Water Absorption, Bulk Density, Apparent Porosity, and Apparent Specific Gravity of Fired Whiteware Products

- 1.3.2.8 ASTM C627 10, Standard Test Method for Evaluating Ceramic Floor Tile Installation Systems Using the Robinson Type Floor Tester
- 1.3.2.9 ASTM A641/A641M-03, Standard Specification for Zinc Coated (Galvanized) Carbon Steel Wire
- 1.3.2.10 ASTM C648-04 (2009), Standard Test Method for Breaking Strength of Ceramic Tile
- 1.3.2.11 ASTM C847 12, Standard Specification for Metal Lath.
- 1.3.2.12 ANSI A326.3-2008 Dynamic Coefficient of Friction (DCOF) that uses a factory calibrated and validated, portable testing apparatus called the BOT-3000 Digital Tribometer.
- 1.3.2.13 ASTM C1178/C1178M 11, Standard Specification for Glass Mat Water Resistant Gypsum Backing Panel
- 1.3.2.14 CSA A3000 08, Cementitious Materials Compendium
- 1.3.2.15 CSA O121-08, Douglas Fir Plywood
- 1.3.2.16 CAN/CGSB 51.34-M86: Vapour Retarder, Polyethylene Film for Use in Building Construction
- 1.3.2.17 CAN/CGSB 75.1-M88 Tile Ceramic
- 1.3.2.18 DIN 51130:2004-06, Testing of Floorcoverings, Determination of Slip Properties, Ramp Method
- 1.3.2.19 ISO 10545-Series, Ceramic Tiles, Standards for Testing
- 1.3.2.20 ISO 13006-2012, Ceramic Tiles, Definitions, Classifications, Characteristics and Marking
- 1.3.2.21 ISO 13007-2010, Ceramic tiles, Grout and adhesives
- 1.3.2.22 TTMAC 2019/2021 Specification Guide 09 30 00, Tile Installation Manual
- 1.3.2.23 TTMAC Hard Surface Maintenance Guide

#### 1.4 DEFINITIONS

- 1.4.1 General: Definitions in the ANSI A108 series of tile installation standards and in ANSI A326.3 apply to Work of this Section unless otherwise specified.
- 1.4.2 ANSI A108 Series: ANSI A108.01, ANSI A108.02, ANSI A108.1A, ANSI A108.1B, ANSI A108.1C, ANSI A108.4, ANSI A108.5, ANSI A108.6, ANSI A108.8, ANSI A108.9, ANSI A108.10, ANSI A108.11, ANSI A108.12, ANSI A108.13, ANSI A108.14, ANSI A108.15, ANSI A108.16, and ANSI A108.17, which are contained in its "Specifications for Installation of Ceramic Tile."
- 1.4.3 Face Size: Actual tile size, excluding spacer lugs.
- 1.4.4 Module Size: Actual tile size plus joint width indicated.
- 1.4.5 Small Format Tile: Tiles having dimensions less than 100 mm x 100 mm.
- 1.4.6 Standard Format Tile: Tiles having dimensions from 100 mm x 100 mm and less than 400 mm x 400 mm.
- 1.4.7 Large Format Tile: Tiles having dimensions 400 mm x 400 mm and larger or weighing over 25 kg/sq.m (5 psf).

- 1.4.8 Gauged Porcelain Tiles/Panels: tiles with thickness ranging from 3 to 6.5mm. Gauged Porcelain Tiles are defined as tiles that measure less than 1m x 1m, while Gauged Porcelain Panels are equal to or larger than 1m x 1m.
- 1.4.9 Dry location or area: A location not normally subject to dampness.
- 1.4.10 Damp/wet location or area: Exterior or interior location that is normally or periodically subject to condensation of moisture in, on, or adjacent to, Work of this Section. This includes location in which water or other liquid can drip, splash, or flow on or against Work of this Section. This includes, but is not limited to, showers, drying areas, change rooms, kitchen areas, washrooms, laundries and associated vestibules and corridors.

## 1.5 ADMINISTRATIVE REQUIREMENTS

- 1.5.1 Preconstruction Meeting:
- 1.5.1.1 Arrange a preconstruction meeting in accordance with Division attended by Contractor, Consultant, tile installer and tile supplier, mortar and grout representative, to discuss the following:
- .1 Substrate and backing surfaces flatness requirements
  - .2 Installation techniques associated with specified materials
  - .3 Compatibility between specified materials and between adjacent materials
  - .4 Concerns arising from site conditions
  - .5 Concerns of the installer or supplier arising from as-constructed conditions

## 1.6 ACTION SUBMITTALS

- 1.6.1 Product Data: Submit manufacturer's product data for each type of product specified; indicate compliance with specification and installation recommendations of manufacturer of products being used.
- 1.6.1.1 Submit manufacturer's instructions, printed product literature and data sheets for the TILING work and include product characteristics, performance criteria, physical size, finish and limitations.
- 1.6.2 Shop Drawings: Submit shop drawings indicating the following:
- 1.6.2.1 Special tile patterns or conditions affecting installation
  - 1.6.2.2 Locations transitions and intersections between differing materials
  - 1.6.2.3 Widths, details, and locations of expansion and contraction joints, and control and isolation joints in tile substrates and finished tile surfaces
  - 1.6.2.4 Indicate locations and configuration of inserts and edging details.
- 1.6.3 Samples for Verification: Submit samples for verification to Consultant including sample sets showing full range of variations expected where products involve normal colour and texture variations:
- 1.6.3.1 Trims: Submit full size units of each type of trim and accessory in each colour required for installation; minimum 150 mm lengths].
  - 1.6.3.2 Tiles: Submit two (2) pieces of each tile specified

- 1.6.3.3 Panels: Submit 900 mm x 900 mm sized panel using specified material including coloured grout, mounted on 19 mm thick plywood backer; include sample installation of perimeter accessories, control or movement joints, and trims where applicable

## 1.7 INFORMATIONAL SUBMITTALS

- 1.7.1 Provide the following submittals during the course of the work
  - 1.7.1.1 Certificates: Submit written statements from manufacturers indicating compatibility with respect to other manufacturer's materials where more than one manufacturer's products form a part of a single tile assembly
  - 1.7.1.2 Master Grade Certificates: Submit for each shipment, type, and composition of tile, signed by tile manufacturer and Installer.

## 1.8 PROJECT CLOSEOUT SUBMITTALS

- 1.8.1 Operations and Maintenance Data: Submit two (2) copies of TTMAC Maintenance Guide in accordance with Division 01, and additional information as follows:
  - 1.8.1.1 Provide specific warning of any maintenance practice or materials that may damage or disfigure the finished Work.
  - 1.8.1.2 Provide manufacturer's maintenance data sheets for floor sealers and other non tile maintenance materials and accessories

## 1.9 MAINTENANCE MATERIALS SUBMITTALS

- 1.9.1 Provide additional materials supplied to the installation in accordance with Division 01, and as follows:
  - 1.9.1.1 Tile Maintenance Materials: Deliver 2% of total for each tile material used for the project, packaged neatly in original containers to prevent damage, from the same lot or batch with a minimum of 1 (one) box pieces of each colour and type use for the project; clearly marked to identify the following:
    - .1 Manufacturer and distributor's name.
    - .2 Material series name and stocking number
    - .3 Material description, including colour and pattern

## 1.10 QUALITY ASSURANCE

- 1.10.1 Qualifications: Provide proof of qualifications when requested by Consultant:
  - 1.10.1.1 Project Quality Standard: Tile Installation Manual published by the TTMAC, together with authorized additions and amendments will be used as a reference standard and forms part of this project specification.
  - 1.10.1.2 Installer: Execute Work of this Section using a company employing qualified personnel skilled in ceramic tile installation, that is a member in good standing of TTMAC at time of Bidding, having a minimum of

five (5) years proven experience and having completed tile installations similar in material, design, and extent to that indicated for this Project

- 1.10.1.3 Supplier: Obtain each specified material from one source with resources to provide products from the same production run for each contiguous area consistent in quality, appearance and physical properties

#### 1.10.2 Mock-Ups

- .1 Provide required Sample Installations in accordance with Division 01, and as follows:
- .2 Construct mock-ups for each form of construction and finish required to verify selections made under Sample submittals and to demonstrate aesthetic effects and qualities of materials and execution
- .3 Mock-up one (1) typical wall indicating tile pattern, grout colour and accessories indicated:
  - .1 Mock-up will be used to coordinate placement of miscellaneous specialties and other related components as well as clearances to adjacent appurtenances (electrical and mechanical fixtures) and finishes.
  - .2 Consultant will require modifications pertaining to aesthetics and placement of components that interfere with other materials or fixtures.
  - .3 When identified modifications to the mock-up are completed, reviewed, and accepted by the Consultant, they will form the standard of acceptance for the remainder of the Work.
- .4 Locate mock-ups where directed on site in the location and of the size indicated or, if not indicated, as directed by Consultant.
- .5 Notify Consultant seven (7) days in advance of the dates and times when mock-ups will be constructed.
- .6 Obtain Consultant's acceptance of mock-ups before proceeding with final unit of Work.
- .7 Accepted mock-ups in an undisturbed condition at the time of Substantial Performance may become part of the completed Work.

#### 1.10.3 Single Source Responsibility:

- 1.10.3.1 Source Limitations for Tile: Obtain tile of each type and colour or finish from single source or producer.
- .1 Obtain tile of each type and colour or finish from same production run and of consistent quality in appearance and physical properties for each contiguous area.
- 1.10.3.2 Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from single manufacturer and each aggregate from single source or producer.

- .1 Obtain setting and grouting materials, except for unmodified Portland cement and aggregate, from single manufacturer.
  - .2 Obtain crack isolation membrane, except for sheet products, from manufacturer of setting and grouting materials.
- 1.10.3.3 Source Limitations for Other Products: Obtain each of the following products specified in this Section from a single manufacturer:
- .1 Crack isolation membrane.
  - .2 Cementitious backer units.
  - .3 Metal edge strips.

## 1.11 DELIVERY, STORAGE, AND HANDLING

- 1.11.1 Packaging Requirements: Packaging is required to list the following:
- 1.11.1.1 Markings: Manufacturer's mark or trademark, product name and country of origin; also include on edge or back side of tile.
  - 1.11.1.2 Quality: Indication of First Quality.
  - 1.11.1.3 Type of Tile: Indicate tile type as described by relevant reference standard.
  - 1.11.1.4 Dimensions: Tile sizing indicating nominal dimensions and working size, and whether sizing is modular or non-modular.
  - 1.11.1.5 Surface: Indicating glazed or unglazed surface finish.
  - 1.11.1.6 Additional Preparation: Indication of whether tiles require any site preparation or surface treatments.
  - 1.11.1.7 Weight: Total dry weight that tile and packaging is not to exceed.
- 1.11.2 Delivery and Acceptance Requirements: Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use in accordance with ANSI A108.1 for labelling sealed tile packages.
- 1.11.3 Storage and Handling Requirements: Store materials to prevent damage or contamination to materials by water, freezing, foreign matter, and other causes; store cementitious materials in a dry area, and blocked off floor and ground surfaces.

## 1.12 SITE CONDITIONS

- 1.12.1 Ambient Conditions: Apply tile after completion of work by other Sections is complete; to surfaces sufficiently dry, clean, firm, level, plumb and free from oil or wax or any other material harmful to tile adhesion and as follows:
- 1.12.1.1 Temperature: Maintain tile materials and substrate temperature between TTMAC recommended minimum and maximum temperature range; unless indicated otherwise by manufacturer, as follows:
    - .1 Tile and Cementitious Materials: Install tiles between 12 deg C (54 deg F) and 38 deg C (100 deg F), meeting installation material manufacturer's written recommendations.
    - .2 Epoxy Materials: Install epoxy mortar and grouts between 18 deg C (65 deg F) and



- .3 35 deg C (95 deg F), meeting installation material manufacturer's written recommendations.
  - .4 Curing Time: Maintain temperature range for 48 hours before and during installation and maintain temperature range until materials are fully set and cured in accordance with manufacturer's recommendations, and as follows:
    - .1 Provide additional heat when there is a risk that surface temperatures may drop below minimum recommended temperatures.
    - .2 Provide cooling or wait until temperature range is below maximum recommended temperatures; do not install materials when temperature is at or above maximum recommended temperature.
- 1.12.2 Ventilation: Maintain adequate ventilation where Work of this Section generates toxic gases or where there is a risk of raising relative humidity to levels that could damage building finishes and assemblies

## **PART 2 PRODUCTS**

### **2.1 MANUFACTURERS**

- 2.1.1 Basis-of-Design for Tiling Materials: Products named in Finishes Legend form the basis-of-design materials for the project. Products from other manufacturers listed herein offering functionally and aesthetically equivalent Products as judged solely by Consultant may be considered by Consultant provided they meet the requirements of this Specification and are submitted to Consultant for review.
- 2.1.2 Acceptable Mortar and Grout Manufacturers: tile mortar and grout materials from the following listed manufacturers are considered acceptable for use in this project:
  - 2.1.2.1 Ardex Engineered Cements.
  - 2.1.2.2 Flextile Ltd.
  - 2.1.2.3 Kiesel GmbH.
  - 2.1.2.4 Laticrete International Inc.
  - 2.1.2.5 Mapei Inc.
  - 2.1.2.6 Proma Adhesives Inc.
  - 2.1.2.7 Custom Building Products
- 2.1.3 Substitution Limitations: Products from manufacturers offering aesthetically and functionally equivalent products may be incorporated into the work of this Section provided they meet the performance requirements established by the named products and provided they submit requests for substitution in accordance with requirements of Division 01.

### **2.2 PERFORMANCE REQUIREMENTS**

- 2.2.1 Provide tile products manufactured and tested in accordance with ANSI A108.1, ANSI A326.3, ANSI A137.3 or ISO 10545 as appropriate to the Basis-of-Design Materials listed in Finishes Legend

- 2.2.2 Factory Blending: For tile exhibiting colour variations within ranges, blend tile in factory and package so tile units taken from one package show same range in colours as those taken from other packages and match Samples reviewed by Consultant.

## 2.3 TILE MATERIALS

- 2.3.1 Ceramic Tile Type (TL-1): Factory-mounted glazed ceramic tile.
- 2.3.1.1 Composition: Ceramic
  - 2.3.1.2 Module Size: Refer to Finish Schedule on Drawings
  - 2.3.1.3 Face: With 6mm (1/4 inch) rough edge trim
  - 2.3.1.4 Surface: Smooth, without abrasive admixture.
  - 2.3.1.5 Dynamic Coefficient of Friction: Not less than 0.42.
  - 2.3.1.6 Finish: Refer to Finish Schedule on Drawings.
  - 2.3.1.7 Tile Colour and Pattern: Refer to Finish Schedule on Drawings
  - 2.3.1.8 Grout Colour: As selected by Consultant from manufacturer's full range.

## 2.4 TILE BASE MATERIALS

- 2.4.1 Ceramic Tile Type (BS6): Factory-mounted glazed ceramic tile.
- 2.4.1.1 Composition: Ceramic
  - 2.4.1.2 Module Size: Refer to Finish Schedule on Drawings
  - 2.4.1.3 Face: With 6mm (1/4 inch) rough edge trim
  - 2.4.1.4 Surface: Smooth, without abrasive admixture.
  - 2.4.1.5 Dynamic Coefficient of Friction: Not less than 0.42.
  - 2.4.1.6 Finish: Refer to Finish Schedule on Drawings.
  - 2.4.1.7 Tile Colour and Pattern: Refer to Finish Schedule on Drawings
  - 2.4.1.8 Grout Colour: As selected by Consultant from manufacturer's full range.

## 2.5 TRIMS AND EDGING

- 2.5.1 Trims: Provide tile trim shapes and profiles to match colour and finish of adjoining tile. Provide trims coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile. Provide shapes as follows, selected from manufacturer's standard shapes:
- 2.5.1.1 Size: Coordinated with sizes and coursing of adjoining flat tile where applicable.
  - 2.5.1.2 Provide base cove, base cap, stair nosings, wainscot cap, external corners, internal corners and tapered transition as required.
- 2.5.2 Straight Edge and Transition Strips: clear satin anodized aluminum edge strips, with height as required to suit tile installation; with integral perforated anchoring leg for setting the strip into the setting material and as follows:

- 
- 2.5.2.1 Same-height Transitions: Provide L-shaped profile with 3 mm (1/8") wide visible surface, integrated trapezoid-perforated anchoring leg, and integrated grout joint spacer.
- .1 Acceptable Products: "Schluter-SCHIENE" by Schlüter Systems or approved equivalent.
- 2.5.2.2 Varying-height (Sloped) Transitions: ADA compliant-type. Provide minimum width to height ratio to conform to barrier-free requirements specified in CSA B651. Following types are acceptable:
- .1 Unless otherwise indicated, Provide profile with sloped exposed surface, 4 mm (5/32") tall leading edge, integrated trapezoid-perforated anchoring leg, and integrated grout joint spacer.
- .1 Acceptable Products: "Schluter-RENO-U" by Schlüter Systems or approved equivalent.
- 2.5.2.3 Trims and edge-protection profiles (Outside corners - vertical applications – normal duty): Provide L-shaped aluminum profile with 3 mm (1/8") wide top section, integrated trapezoid-perforated anchoring leg, and integrated grout joint spacer.
- .1 Acceptable Products: "Schluter-JOLLY" by Schlüter Systems or approved equivalent.
- 2.5.2.4 Trims and edge-protection profiles (Outside corners vertical applications – heavy duty): Provide roll-formed stainless steel V-shaped profile with 37 mm (1-15/32") wide exposed surfaces joined by a symmetrically rounded corner, with integrated trapezoid-perforated anchoring legs.
- .1 Acceptable Products: "Schluter-ECK-E" by Schlüter Systems or approved equivalent.
- 2.5.3 Thresholds: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes; honed finish on exposed surfaces, size to suit door opening and frame width and as follows:
- 2.5.3.1 Bevel edges at 1:2 slope, with lower edge of bevel aligned with or up to 1.5 mm (1/16 inch) above adjacent floor surface. Finish bevel to match top surface of threshold. Limit height of threshold to 12.7 mm (1/2 inch) or less above adjacent floor surface.
- 2.5.4 Prefabricated Movement Joints: purpose made, having a Shore A Hardness of 35 or greater and elasticity of plus or minus 25% when used in accordance to TTMAC Detail 301MJ-2019/2021 and as follows:
- 2.5.4.1 Acceptable Products: "Schlüter – DILEX Series" by Schlüter Systems or approved equivalent. Specific profile as recommended by manufacturer.

## 2.6 MORTAR, ADHESIVE AND GROUT MATERIALS

- 2.6.1 Primer: Low VOC, low viscosity primer as recommended by manufacturer to suit substrate and site conditions; provide proof of bonding ability of setting system where manufacturer recommends that a primer is not necessary to installation.
- 2.6.2 Surface Preparation Materials: Provide following underlayment materials:

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- 2.6.2.1 Cementitious Mortar Bed or Leveling Screed: cement mortar screed for interior concrete floor preparation, repair and levelling from 19 mm (3/4") to 38 mm (1-1/2") thickness
- .1 "ARDEX A38 Rapid Set Screed" by Ardex Engineered Cements.
- 2.6.3 Wall Tile Systems: Provide the following setting materials:
- 2.6.3.1 Thin Set Interior Installation: Dry set mortar meeting or exceeding requirements of ANSI A118.4, or ANSI A118.11 sag-resistant formulated for thin and medium set applications, factory sanded mortar consisting of Portland cement, sand and additives requiring only addition of potable water for installation complete with bond enhancing latex additive and as follows:
- .1 "ARDEX X 5 Thin Set Mortar" by Ardex Engineered Cements
  - .2 "56SR Non-Sag Mortar" by Flextile Ltd.
  - .3 "Servolight S2 SuperTec" (walls and floors), "Servolight" (walls), "Servoflex Trio SuperTec" (floors only) by Kiesel GmbH.
  - .4 "4XLT" by Laticrete International Ltd.
  - .5 "Keraflex Plus" by Mapei Inc.
  - .6 "Pro Flex SF" or "Pro P151 SF" by Proma Adhesives Inc.
  - .7 "VersaBond LFT" Custom Building Products.
- 2.6.4 Adhesive Systems: Provide the following materials:
- 2.6.4.1 Epoxy Adhesive: Thin set adhesive system using 100% solids epoxy resin and epoxy hardener meeting or exceeding the requirements for ANSI A108.1; stain proof, chemical resistant and having high temperature resistance and water cleanable, and as follows:
- .1 "ARDEX WA" by Ardex Engineered Cements
  - .2 "Flex-Epoxy 100 setting mortar" by Flextile Ltd.
  - .3 "Okapox royal" walls and floors by Kiesel GmbH.
  - .4 "Latapoxy 300" by Laticrete International, Inc.,
  - .5 "Kerapoxy 410" by Mapei Inc.
  - .6 "Pro Grout Xtreme" By Proma Adhesives Inc.
  - .7 "EBM – Lite" by Custom Building Products
- 2.6.5 Tile Grout Systems: Provide the following materials:
- 2.6.5.1 Colours: Colours will be selected from manufacturer's full range.
- 2.6.5.2 Grout Sealer: Penetrating sealer as recommended by grout manufacturer to suit grout selected.
- .1 "Bullet Proof StoneTech" by Laticrete or approved equivalent.
- 2.6.5.3 Sanded Polymer Modified Grout: Factory blended stain resistant polymer modified portland cement meeting or exceeding requirements of ANSI A118.7, specifically formulated for joints greater than 3 mm in width and as follows:
- .1 "ARDEX FL Grout" by Ardex Engineered Cements

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- .2 "Flextile 600 Series Polymer Modified Grout" by Flextile Ltd.
  - .3 "Servoperl royal" universal, high performance grout by Kiesel GmbH.
  - .4 "Permacolor Grout" or "Permacolor Select" by Laticrete International Inc.
  - .5 "Ultracolor® PlusFA " (Fast Set) by Mapei Inc.
  - .6 "Pro Grout Sanded" by Proma Adhesives Inc.
  - .7 "Poly Blend Sanded" by Custom Building Products
- 2.6.5.4 Unsanded Polymer Modified Grout: Factory blended stain resistant polymer modified portland cement meeting or exceeding requirements of ANSI A118.7, specifically formulated for joints less than or equal to 3 mm in width and as follows:
- .1 "ARDEX FG-C Grout" by Ardex Engineered Cements
  - .2 "Flextile 500 Series Polymer Modified Grout" by Flextile Ltd.
  - .3 "Servoperl royal" universal, high performance grout by Kiesel GmbH.
  - .4 "Permacolor Select unsanded" by Laticrete International Inc.
  - .5 "Keracolor-U" or "Ultracolor® Plus" (Fast Set) by Mapei Inc.
  - .6 "Pro Grout Unsanded" by Proma Adhesives Inc.
  - .7 "Poly Blend Unsanded" by Custom Building Products
- 2.6.5.5 Chemical-Resistant Epoxy Grout: Water cleanable, chemical resistant, factory blended modified portland cement compound with 100% epoxy additives and hardeners meeting or exceeding requirements of ANSI A118.3 and as follows:
- .1 "ARDEX WA" by Ardex Engineered Cements
  - .2 "Epoxy Grout Flex-Epoxy 100" by Flextile Ltd.,
  - .3 "Okapox royal " wall and floor by Kiesel GmbH.
  - .4 "SPECTRALock Pro Gout" by Laticrete International, Inc.
  - .5 "Kerapoxy CQ" by Mapei Inc.
  - .6 "Pro Grout Xtreme" by Proma Adhesives Inc.
  - .7 "CEG – Lite" by Custom Building Products
- 2.6.5.6 RTU Grout: colour consistent, no efflorescence and stain resistant acrylic based grout meeting or exceeding specific tests of ANSI A118.3 and as follows
- .1 "ColourMax Plus Grout" by Flextile Ltd.
  - .2 "READY-TO-USE" by Laticrete International Ltd.
  - .3 "Pro Grout Xtreme" by Proma Adhesives Inc.
  - .4 "Flexcolor CQ" by Mapei Inc.
  - .5 "Fusion Pro" by Custom Building Products

## 2.7 ACCESSORIES

2.7.1 Crack Isolation Membranes: Load bearing, membrane meeting requirements of ANSI A118.12; thickness as recommended by manufacturer to accommodate in-plane substrate movement of 10 mm (1/8 inch) in thin set applications meeting or exceeding requirements of ANSI A108.1 and as follows:

2.7.1.1 Acceptable premanufactured self-adhering membranes:

- .1 "1000 Flexilastic Crack Isolation Membrane" by Flextile Ltd.
- .2 "Blue 929 " waterproofing membrane system with "fiberglass cloth reinforcement" by Laticrete International, Inc.
- .3 "Pro MBR XD" by Proma Adhesives Inc.
- .4 "Crack Buster Pro" by Custom Building Products

2.7.1.2 Acceptable liquid applied, lightweight fabric reinforced membranes:

- .1 "ARDEX 8+9 Waterproofing & Crack Isolation Membrane with SK Mesh" by Ardex Engineered Cements
- .2 "WP-980 Waterproofing & Crack Isolation Membrane with Reinforcing Fabric" by Flextile Ltd.
- .3 "Servoflex DMS 1K SuperTec and Crack Isolation Membrane" by Kiesel GmbH.
- .4 "Hydro Ban" or "Fracture Ban SC" waterproofing membrane system with Laticrete's fiberglass cloth reinforcement by Laticrete International, Inc.
- .5 "Mapelastical CI" by Mapei Inc.
- .6 "Custom 9240 Waterproofing Antifracture Membrane" by Custom Building Products

2.7.2 Uncoupling Membranes (for all large-format tiles): Load bearing, pre-manufactured membrane meeting requirements of ANSI A118.12; thickness as recommended by manufacturer to accommodate in-plane substrate movement of 3 mm (1/8 inch) in thin set applications meeting or exceeding requirements of ANSI A108.1 and as follows:

2.7.2.1 "Flexbone" by Ardex Engineered Cements

2.7.2.2 "FlexMat" by Flextile Ltd.

2.7.2.3 "Strata Mat" or "Strata Mat XT" by Laticrete International, Inc

2.7.2.4 "Schluter 'DITRA XL'" Schluter Systems.

2.7.2.5 "Mapeguard UM" by Mapei, Inc.

2.7.2.6 "Redgard Uncoupling Mat" by Custom Building Products

2.7.3 Cementitious Backer Units: Reinforced portland cement board, reinforcing mesh embedded near both faces in accordance with ASTM C1325 or ANSI A118.9, and as follows:

2.7.3.1 Acceptable Products:

- .1 "FiberCement BackerBoard" by CertainTeed Corp.
- .2 "DUROCK Cement Tile Backer Board" by CGC
- .3 "PermaBase Board" by Unifix Inc.

- .4 "WonderBoard" by Custom Building Products
- 2.7.3.2 Thickness: 6.4 mm (1/4 inch).
- 2.7.3.3 Mould Resistance: ASTM D3273, score of 10 as rated according to ASTM D3274.
- 2.7.4 Latex Additive: Formulated for use in Portland cement mortars and grouts.
- 2.7.5 Water: Potable, clean and free of chemicals and contaminants detrimental to mortar or grout mixes.
- 2.7.6 Joint Sealant: As specified in Section 07 92 00
- 2.7.7 Sealer: Meeting or exceeding requirements of CAN/CGSB 25.20, Type as recommended by tile manufacturer.

## 2.8 MIXES

- 2.8.1 Mix premanufactured mortars and grouts in accordance with referenced standards, and mortar and grout manufacturers' written instructions; mix site mixed materials as follows:
  - 2.8.1.1 Scratch Coat (by volume): Mix 1 part Portland cement, 4 parts sand, and latex additive where required by TTMAC Detail
- 2.8.2 Site mix proportioned mortar and grout materials as follows:
  - 2.8.2.1 Bond Coat (by volume): Mix 1 part Portland cement, 4 parts sand, and latex additive where required by TTMAC Detail.
  - 2.8.2.2 Slurry Bond Coat: Mix Portland cement and water to a creamy paste consistency. Include latex additive where required by TTMAC Detail.
  - 2.8.2.3 Mortar Bed for Walls (by volume): Mix 1 part Portland cement, 4 parts sand, and latex additive where required by TTMAC Detail.
  - 2.8.2.4 Leveling Coat (by volume): Mix 1 part Portland cement, 4 parts sand, and latex additive where required by TTMAC Detail.
  - 2.8.2.5 Mortar Bed for Floors: 1 part Portland cement, 4 parts sand, and latex additive where required by TTMAC Detail; when mixed with water the mortar bed shall be of such a consistency and workability that will allow maximum compaction during tamping of the mortar bed, and achieve a minimum compressive strength of 15 MPa after 28 days. A stronger mix can be achieved by adding latex to the water
- 2.8.3 Adjust water volume depending on moisture content of sand to obtain consistency and workability

## PART 3 EXECUTION

### 3.1 EXAMINATION

- 3.1.1 Examine materials ordered for the project before delivering to the site; open boxes and confirm that materials match accepted samples, are free from defects and breakage detrimental to final appearance and installation, and as follows:

- 3.1.1.1 Consultant will only accept Grade 1 Standard, materials appearing on site factory marked as seconds or discounted or that are not consistent with materials submitted for review will be rejected.
- 3.1.1.2 Replace unacceptable materials at no additional cost to the Owner; order replacement materials using most expedient delivery method to minimize effect on construction schedule.
- 3.1.2 Examine substrates, areas, and conditions where tile will be installed for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile and confirm the following:
  - 3.1.2.1 Verify that substrates for bonding tile are firm; dry; clean; free from oil, waxy films, and curing compounds; and are within starting flatness tolerances as specified in Section 03 35 10, and are ready for application of levelling materials specified in this Section.
  - 3.1.2.2 Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of Work, and similar items located in or behind tile have been completed before installing tile.
  - 3.1.2.3 Verify that joints and cracks in tile substrates are coordinated with tile joint locations; adjust joints in consultation with Consultant where joints are not coordinated
  - 3.1.2.4 Notify Consultant in writing of any conditions that are not acceptable; do not proceed with installation until unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- 3.2.1 Protection: Protect surrounding work from damage or disfiguration arising from work of this Section.
- 3.2.2 Surfaces: Thoroughly clean substrate surfaces receiving tile finishes to remove grease, oil or dust film, and other contaminants affecting bond of materials within bonding systems and as follows:
  - 3.2.2.1 Clean back of each tile before installation to remove surface contaminants and cutting residue, firing release dust and other debris detrimental to bond and final surface appearance.
- 3.2.3 Blending: For tile exhibiting colour variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colours as those taken from other packages and match approved Samples reviewed by Consultant. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

### 3.3 INSTALLATION OF TILE BACKING PANEL

- 3.3.1 Install panels and treat joints according to ANSI A108.11 and manufacturer's written instructions for type of application indicated. Use polymer-modified dry-set mortar for bonding material unless otherwise directed in manufacturer's written instructions.



### 3.4 INSTALLATION OF UNCOUPLING MEMBRANE

- 3.4.1 Install uncoupling membrane to comply with manufacturer's written instructions to produce membrane of uniform thickness that is bonded securely to substrate.
- 3.4.2 Allow uncoupling membrane to cure before installing tile or setting materials over it.
- 3.4.3 Provide uncoupling membrane to decks, floors, steps and ramps to tiles applied in the following conditions:
  - 3.4.3.1 Large format tile and other locations as noted on Drawings.

### 3.5 INSTALLATION OF CRACK ISOLATION MEMBRANE

- 3.5.1 Install crack isolation membrane to comply with ANSI A108.17 and manufacturer's written instructions to produce membrane of uniform thickness that is bonded securely to substrate.
- 3.5.2 Allow crack isolation membrane to cure before installing tile or setting materials over it.
- 3.5.3 Provide crack suppression membrane to decks, floors, steps and ramps to tiles applied in the following locations:
  - 3.5.3.1 Where recommended by manufacturer.

### 3.6 INSTALLATION OF TILE

- 3.6.1 Install tiling in accordance with requirements of TTMAC Tile Installation Manual 2019/2021 (TMAC- Specification Guide 09 30 00;) and parts of ANSI A108 Series of tile installation standards that apply to types of bonding and grouting materials, and to methods required for complete tile installation.
- 3.6.2 Extend tile work into recesses and under or behind equipment and fixtures to form a complete covering without interruptions:
  - 3.6.2.1 Terminate Work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
  - 3.6.2.2 Make cut edges smooth, even and free from chipping.
  - 3.6.2.3 Do not split tile.
  - 3.6.2.4 Accurately form intersections and returns; perform cutting and drilling of tile without marring visible surfaces:
    - .1 Cut, drill, and fit tile to accommodate work of other trades penetrating or abutting work of this Section.
    - .2 Carefully grind cut edges of tile abutting trim, finish, or built in items for straight aligned joints.
    - .3 Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so that plates, collars, or covers overlap tile and to provide a uniform joint appearance.
  - 3.6.2.5 Lay tile in pattern indicated on Drawings and as follows:
    - .1 Align joints when adjoining tiles on floor, base, walls, and trim are the same size.

- .2 Lay out tile Work and centre tile sites in both directions in each space or on each wall area.
  - .3 Centre tile patterns between control and movement joints; notify Consultant for further instructions where tile patterns do not align with control or movement joints.
  - .4 Cut tile accurately and without damage.
  - .5 Smooth exposed cut edges with abrasive stone, where exposed
  - .6 Chipped or split edges are not acceptable
  - .7 Minimum tile width is half unit size unless specifically indicated otherwise on Drawings.
  - .8 Adjust tile layout to minimize tile cutting.
  - .9 Provide uniform joint widths.
  - .10 Make joints between tile sheets the same width as joints within tile sheets so joints between sheets are not apparent in finished Work.
- 3.6.2.6 Bonding Bed: Set tile in place while bond coat is wet and tacky and as follows:
- .1 Adjust amount of bonding materials placed on substrates based on temperature and humidity to prevent skinning over of bonding materials.
  - .2 Use sufficient bond coat to provide a minimum 80% contact for tiles smaller than 300 mm x 300 mm and areas having Residential or Light Load Bearing Performance requirements with bonding material evenly dispersed and pressed into back of tile; refer to back buttering requirements for larger materials and installations having Moderate or higher Load Bearing Performance requirements.
  - .3 Notch bond coat in horizontal straight lines and set on freshly placed bonding material while moving (sliding) tile back and forth at 90° to notches.
  - .4 Verify that corner and edges are fully supported by bonding material.
  - .5 Set tiles to prevent lippage greater than 1 mm over a 3 mm grout joint.
  - .6 Keep two-thirds of grout joint depth free of bonding materials.
  - .7 Clean excess bonding materials from tile surface prior to final set.
  - .8 Sound tiles after bonding materials have cured and replace hollow sounding tile before grouting
- 3.6.2.7 Back Buttering: Obtain 100% mortar coverage in accordance with applicable requirements for back buttering of tile in referenced TTMAC and ANSI A108 series of tile installation standards for the following applications:
- .1 Glass tile

- .2 Tile installed with chemical resistant mortars and grouts
- .3 Tile having tiles 300 mm or larger in any direction
- .4 Tile having tiles with raised or textured backs
- .5 Tile having tile installation rated for Heavy or Extra Heavy Duty.
- 3.6.2.8 Install prefabricated edge strips and control joints at locations indicated on Drawings and Schedules or where exposed edge of floor tile meets different flooring materials and exposed substrates
- 3.6.2.9 Protect exposed edges of floor tile with properly sized transition strips, use sloped reducer strips where uneven transitions between 6 mm and 13 mm occur
- 3.6.2.10 Control and Movement Joints: Install control joints and expansion joints in tile work in accordance with TTMAC Detail 301MJ-2019/2021; keep control and expansion joints free of bonding materials and as follows:
  - .1 Cut tiles to establish line of joints; sawn joints after installation of tiles will not be acceptable to Consultant.
  - .2 Locate joints in tile surfaces directly above joints in concrete substrates.
  - .3 Provide floor control joints over structural control joints.
  - .4 Install prefabricated joint profiles in accordance with manufacturer's written instructions, set with top surface of joint profile slightly below top surface of tile.
  - .5 Prepare joints and apply sealants in accordance with requirements of Section 07 92 00.
  - .6 Keep control and movement joints free from setting materials.
  - .7 Form an open joint for sealant in tile wherever a change in backing material occurs, at all vertical interior corners, around penetrating pipes and fixtures, and where tile abuts other materials or fixtures

<b>Environment</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Joint Width</b>
Interior/Shaded	4800 mm	6100 mm	6 mm minimum
Interior/Sunlight	2400 mm	3700 mm	6 mm minimum
Exterior/Normal	2400 mm	3700 mm	10 mm minimum
Exterior/Excessive	2400 mm	3000 mm	13 mm minimum

- 3.6.2.11 Grouting: Install grout in accordance with manufacturer's written instructions, the requirements of TTMAC, and as follows:
  - .1 Allow proper setting time before application of grout.
  - .2 Pre-seal or wax tiles requiring protection from grout staining.
  - .3 Force grout into joints to a smooth, dense finish.
  - .4 Remove excess grout in accordance with manufacturer's written instructions and polish tile with clean cloths
- 3.6.2.12 Joint Widths: Unless otherwise indicated, install tile with the following joint widths:

### 3.7 CLEANING AND PROTECTION

- 3.7.1 Cleaning: Clean tile surfaces so they are free of foreign matter using manufacturer recommended cleaning products and methods after completion of placement and grouting and as follows:
- 3.7.1.1 Remove grout residue from tile as soon as possible.
  - 3.7.1.2 Unglazed tile may be cleaned with acid solutions only when permitted by tile and grout manufacturer's written instructions, but no sooner than 10 days after installation; protect metal surfaces, cast iron, and vitreous plumbing fixtures from effects of acid cleaning.
  - 3.7.1.3 Flush surface with clean water before and after cleaning.
  - 3.7.1.4 Remove temporary protective coating by method recommended by coating manufacturer that is acceptable to brick and grout manufacturer; trap and remove coating to prevent it from clogging drains.
- 3.7.2 Protection: Leave finished installation clean and free of cracked, chipped, broken, unbonded, or other tile deficiencies as follows:
- 3.7.2.1 7 days after completion of tile work.
  - 3.7.2.2 Provide protective covering until Substantial Performance of the Work.
  - 3.7.2.3 Protect wall tiles and bases from impact, vibration, heavy hammering on adjacent and opposite walls for a minimum of 7 days after installation

### 3.8 INTERIOR CERAMIC TILE INSTALLATION SCHEDULE

- 3.8.1 Interior Wall Installations, Studs or Furring:
- 3.8.1.1 Gypsum Board (Dry Areas): 304W-2019/2021
  - 3.8.1.2 Cementitious Backer Unit (Wet or Dry Areas): 305W-2019/2021 (unless indicated otherwise); 306W-2019/2021 (tub enclosures)
  - 3.8.1.3 Fibreglass Mat Gypsum Board (Wet or Dry Areas): 305W-2019/2021 (unless indicated otherwise); 306W-2019/2021 (tub enclosures)
  - 3.8.1.4 Large Format Tile: 330LFTW-2019/2021
  - 3.8.1.5 Provide waterproofing membrane over substrate where indicated on Drawings or where required. Provide tile bonded to substrate where membrane is not indicated or required.

END OF SECTION

## **PART 1 GENERAL**

### **1.1 GENERAL INSTRUCTIONS**

- 1.1.1 Read and conform to: The general provisions of the CCDC 2, 2008, including General and Supplementary Conditions; and the requirements of Division 01 Specifications and any additional documents referred to in this Section.

### **1.2 SUMMARY**

- 1.2.1 Provide labour, materials, products, equipment and services to complete the ACOUSTICAL PANEL CEILINGS work specified herein. This includes, but is not necessarily limited, to:
- 1.2.1.1 Acoustical panels
  - 1.2.1.2 Metal suspension systems
  - 1.2.1.3 Accessories
  - 1.2.1.4 Acoustical sealants
  - 1.2.1.5 Auxiliary materials required for a complete installation..
- 1.2.2 Related Requirements: Specifications throughout all Divisions of the Project shall be read as a whole, and may be directly applicable to this Section.
- 1.2.2.1 Related requirements provided below are for convenience purposes only.
- .1 Section 05 50 00, Metal Fabrications for additional supports and reinforcing for ceiling assemblies.

### **1.3 REFERENCES**

- 1.3.1 Reference Standards: Unless otherwise indicated in this Section or the Building Code, the latest published editions of reference standards as of the Project's Bid Closing deadline apply. Refer to 01 42 19 - Reference Standards.

### **1.4 PREINSTALLATION MEETINGS**

- 1.4.1 Preinstallation Conference: Conduct conference at Project site.

### **1.5 ACTION SUBMITTALS**

- 1.5.1 Product Data: Submit product data in accordance with Division 01 for each type of product indicated.
- 1.5.1.1 Submit manufacturer's instructions, printed product literature and data sheets for the ACOUSTICAL PANEL CEILINGS work and include product characteristics, performance criteria, physical size, finish and limitations
- 1.5.2 Samples: Submit samples in accordance with Division 01 for each exposed product and for each colour and texture specified, 150 mm (6 inches) in size.
- 1.5.2.1 Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of sizes indicated below:

- .1 Acoustical Panels: Set of full-size Samples of each type, colour, pattern, and texture.

## 1.6 INFORMATIONAL SUBMITTALS

- 1.6.1 Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
  - 1.6.1.1 Ceiling suspension-system members.
  - 1.6.1.2 Structural members to which suspension systems will be attached.
  - 1.6.1.3 Method of attaching hangers to building structure.
    - .1 Supply layouts for cast-in-place anchors, clips, and other ceiling attachment devices whose installation is specified in other Sections.
  - 1.6.1.4 Carrying channels or other supplemental support for hanger-wire attachment where conditions do not permit installation of hanger wires at required spacing.
  - 1.6.1.5 Size and location of initial access modules for acoustical panels.
  - 1.6.1.6 Items penetrating finished ceiling and ceiling-mounted items including the following:
    - .1 Lighting fixtures.
    - .2 Diffusers.
    - .3 Grilles.
    - .4 Speakers.
    - .5 Sprinklers.
    - .6 Access panels.
    - .7 Perimeter moldings.
  - 1.6.1.7 Show operation of hinged and sliding components covered by or adjacent to acoustical panels.
- 1.6.2 Certificates:
  - 1.6.2.1 Submit independent test data and design tables for each type of insert to be employed on this Project for hanger supports.
  - 1.6.2.2 Obtain approval of electrical utility authorities having jurisdiction for support of light fixtures, by ceiling grid and supports, to satisfy requirements of electrical inspection department of local electrical authority. Adjust grid, fixing devices and support hangers as required to obtain approval.
  - 1.6.2.3 Submit written confirmations to Divisions 22, 23 and 26, when requested by Consultant, that suspended ceiling is capable of supporting additional weight of mechanical and electrical fixtures.

## 1.7 CLOSEOUT SUBMITTALS

- 1.7.1 Maintenance Data: Submit maintenance data in accordance with Division 01 for finishes to include in maintenance manuals.

## 1.8 MAINTENANCE MATERIAL SUBMITTALS

- 1.8.1 Supply extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1.8.1.1 Acoustical Ceiling Units: Full-size panels equal to 2 percent of quantity installed.

## 1.9 QUALITY ASSURANCE

- 1.9.1 Source Limitations: Obtain each type of acoustical ceiling panel and its supporting suspension system from single source from single manufacturer.
- 1.9.2 Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
- 1.9.3 Mock-ups: Build mock-ups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.
  - 1.9.3.1 Build mockup of typical ceiling area as shown on Drawings.
  - 1.9.3.2 Approval of mock-ups does not constitute approval of deviations from the Contract Documents contained in mock-ups unless Consultant specifically approves such deviations in writing.
  - 1.9.3.3 Subject to compliance with requirements, reviewed mock-ups may become part of the completed Work if undisturbed at time of Substantial Performance of the Work.

## 1.10 DELIVERY, STORAGE, AND HANDLING

- 1.10.1 Deliver acoustical panels, suspension-system components, and accessories to Project site and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.
- 1.10.2 Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.

## 1.11 FIELD CONDITIONS

- 1.11.1 Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.
  - 1.11.1.1 Pressurized Plenums: Operate ventilation system for not less than 48 hours before beginning acoustical panel ceiling installation.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- 2.1.1 Products from the following manufacturers may be acceptable for inclusion into The Work, provided they meet requirements of Contract Documents.

- 2.1.1.1 Armstrong World Industries Canada Ltd.; [www.armstrong.com](http://www.armstrong.com)
- 2.1.1.2 CGC/USG Inc.; [www.cgcinc.com](http://www.cgcinc.com)
- 2.1.1.3 CertainTeed Canada; [www.certainteed.com](http://www.certainteed.com)
- 2.1.1.4 Rockfon; [www.rockfon.com](http://www.rockfon.com)

## 2.2 PERFORMANCE REQUIREMENTS

- 2.2.1 Acoustical Panel Standard: Provide manufacturer's standard panels according to ASTM E1264 and designated by type, form, pattern, acoustical rating, and light reflectance unless otherwise indicated.
- 2.2.2 Design suspension system to support safely and without distortion entire ceiling system and superimposed loads of:
  - 2.2.2.1 lighting fixtures,
  - 2.2.2.2 Air supply diffusers, boots, fire alarm grilles and exhaust and return air grilles;
- 2.2.3 Coordinate installation and cooperate with Mechanical and Electrical Subcontractors, to accommodate mechanical and electrical items, or any other work required to be incorporated in or coordinated with the ceiling system.
- 2.2.4 Surface-Burning Characteristics: Comply with CAN/ULC-S102/S102.2 or equivalent to ASTM E84 (subject to approval by authorities having jurisdiction); testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
  - 2.2.4.1 Flame-Spread Index: Class A (25) according to ASTM E1264.
  - 2.2.4.2 Smoke-Developed Index: 50 or less.

## 2.3 ACOUSTICAL PANELS - SMOOTH, LIGHTLY TEXTURED/LARGE FORMAT (ACT1)

- 2.3.1 Type and Form: Type IV, mineral base with membrane-faced overlay; Form 2, water felted with overlay; or type XIII, Aluminum or steel strip with mineral or fiber glass fiber base backing; Form 2, non-perforated.
- 2.3.2 Colour: White.
- 2.3.3 Light Reflectance (LR): Not less than 0.85.
- 2.3.4 Ceiling Attenuation Class (CAC): Not less than 22.
- 2.3.5 Noise Reduction Coefficient (NRC): Not less than.
- 2.3.6 Edge/Joint Detail: To match existing
- 2.3.7 Thickness: Minimum 19 mm (3/4 inch).
- 2.3.8 Modular Size: To match existing.
- 2.3.9 Basis-of-Design: Refer to Schedules on Drawings.

## 2.4 METAL SUSPENSION SYSTEM

- 2.4.1 Metal Suspension-System Standard: To match existing



## 2.5 ACCESSORIES

- 2.5.1 Attachment Devices: Size for five times the design load indicated in ASTM C635/C635M, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.
- 2.5.1.1 Anchors in Concrete: Anchors of type and material indicated below, with holes or loops for attaching hangers of type indicated and with capability to sustain, without failure, loads imposed by ceiling construction as determined by limit states design, as determined by testing according to ASTM E488/E488M or ASTM E1512 as applicable, conducted by a qualified testing and inspecting agency.
- .1 Corrosion Protection: Carbon-steel components zinc plated according to ASTM B633, Class SC 1 (mild) service condition.
- 2.5.2 Wire Hangers, Braces, and Ties: Provide wires as follows:
- 2.5.2.1 Zinc-Coated, Carbon-Steel Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper.
- 2.5.2.2 Size: Wire diameter sufficient for its stress at three times hanger design load (ASTM C635/C635M, Table 1, "Direct Hung") will be less than yield stress of wire, but not less than 2.69-mm- (0.106-inch-) diameter wire.
- 2.5.3 Hanger Rods: Mild steel, zinc coated or protected with rust-inhibitive paint.
- 2.5.4 Flat Hangers: Mild steel, zinc coated or protected with rust-inhibitive paint.
- 2.5.5 Angle Hangers: Angles with legs not less than 22 mm (7/8 inch) wide; formed with 1-mm- (0.04-inch-) thick, galvanized-steel sheet complying with ASTM A653/A653M, Z275 (G90) coating designation; with bolted connections and 8-mm- (5/16-inch-) diameter bolts.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- 3.1.1 Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.
- 3.1.2 Examine acoustical panels before installation. Reject acoustical panels that are wet, moisture damaged, or mold damaged.
- 3.1.3 Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- 3.2.1 Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders unless otherwise indicated, and comply with layout shown on reflected ceiling plans.

3.2.2 Layout openings for penetrations centered on the penetrating items.

### 3.3 INSTALLATION

3.3.1 Install acoustical panel ceilings according to ASTM C636/C636M and manufacturer's written instructions.

3.3.2 Suspend ceiling hangers from building's structural members and as follows:

3.3.2.1 Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.

3.3.2.2 Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.

3.3.2.3 Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension-system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.

3.3.2.4 Secure wire hangers to ceiling-suspension members and to supports above with a minimum of three tight turns. Connect hangers directly to structure or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.

3.3.2.5 Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both the structure to which hangers are attached and the type of hanger involved. Install hangers in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.

3.3.2.6 Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, or anchors that extend through forms into concrete.

3.3.2.7 When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.

3.3.2.8 Do not attach hangers to steel deck tabs.

3.3.2.9 Do not attach hangers to steel roof deck. Attach hangers to structural members.

3.3.2.10 Space hangers not more than 1200 mm (48 inches) o.c. along each member supported directly from hangers unless otherwise indicated; provide hangers not more than 200 mm (8 inches) from ends of each member.

3.3.2.11 Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards.

3.3.3 Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building's structural members

as required for hangers, without attaching to permanent metal forms, steel deck, or steel deck tabs. Fasten bracing wires into concrete with anchors.

- 3.3.4 Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.
  - 3.3.4.1 Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.
  - 3.3.4.2 Screw attach moldings to substrate at intervals not more than 400 mm (16 inches) o.c. and not more than 75 mm (3 inches) from ends. Miter corners accurately and connect securely.
  - 3.3.4.3 Do not use exposed fasteners, including pop rivets, on moldings and trim.
- 3.3.5 Install suspension-system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- 3.3.6 Install acoustical panels with undamaged edges and fit accurately into suspension-system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide precise fit.
  - 3.3.6.1 Arrange directionally patterned acoustical panels as follows:
    - .1 As indicated on reflected ceiling plans.
  - 3.3.6.2 For square-edged panels, install panels with edges fully hidden from view by flanges of suspension-system runners and moldings.
  - 3.3.6.3 For reveal-edged panels on suspension-system runners, install panels with bottom of reveal in firm contact with top surface of runner flanges.
  - 3.3.6.4 For reveal-edged panels on suspension-system members with box-shaped flanges, install panels with reveal surfaces in firm contact with suspension-system surfaces and panel faces flush with bottom face of runners.
  - 3.3.6.5 Paint cut edges of panel remaining exposed after installation; match colour of exposed panel surfaces using coating recommended in writing for this purpose by acoustical panel manufacturer.
  - 3.3.6.6 Protect lighting fixtures and air ducts according to requirements indicated for fire-resistance-rated assembly.

### 3.4 ERECTION TOLERANCES

- 3.4.1 Suspended Ceilings: Install main and cross runners level to a tolerance of 3 mm in 3.6 m (1/8 inch in 12 feet), non-cumulative.
- 3.4.2 Moldings and Trim: Install moldings and trim to substrate and level with ceiling suspension system to a tolerance of 3 mm in 3.6 m (1/8 inch in 12 feet), non-cumulative.

### 3.5 CLEANING

- 3.5.1 Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension-system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage.

- 3.5.2 Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION

## **PART 1 GENERAL**

### **1.1 GENERAL INSTRUCTIONS**

- 1.1.1 Read and conform to: The general provisions of the Contract Contract, including General and Supplementary Conditions; and the requirements of Division 01 Specifications and any additional documents referred to in this Section.

### **1.2 SUMMARY**

- 1.2.1 Provide labour, materials, products, equipment and services to complete the RESILIENT BASE AND ACCESSORIES work specified herein. This includes, but is not necessarily limited, to:
- 1.2.1.1 Thermoplastic-rubber base.
  - 1.2.1.2 Rubber moulding accessories.
  - 1.2.1.3 Auxiliary materials required for a complete installation.
- 1.2.2 Related Requirements: Specifications throughout all Divisions of the Project shall be read as a whole, and may be directly applicable to this Section. Related requirements provided below are for convenience purposes only.
- 1.2.2.1 Section 03 35 10 – Concrete Floor Finishing
  - 1.2.2.2 Section 06 40 00 – Architectural Woodwork
  - 1.2.2.3 Section 09 65 14 – Resilient Rubber Flooring
  - 1.2.2.4 Section 09 65 16 – Resilient Vinyl Flooring

### **1.3 REFERENCES**

- 1.3.1 Reference Standards: Unless otherwise indicated in this Section or the Building Code, the latest published editions of reference standards as of the Project's Bid Closing deadline apply. Refer to 01 42 19 - Reference Standards.

### **1.4 ACTION SUBMITTALS**

- 1.4.1 Product Data: Submit product data in accordance with Division 01 for each type of product.
- 1.4.1.1 Submit manufacturer's instructions, printed product literature and data sheets for the RESILIENT BASE AND ACCESSORIES work and include product characteristics, performance criteria, physical size, finish and limitations
- 1.4.2 Samples: Submit samples in accordance with Division 01 for each exposed product and for each colour and texture specified, not less than 300 mm (12 inches) long.

### **1.5 MAINTENANCE MATERIAL SUBMITTALS**

- 1.5.1 Supply extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

- 1.5.1.1 Supply not less than 3 linear m (10 linear feet) for every 150 linear m (500 linear feet) or fraction thereof, of each type, colour, pattern, and size of resilient product installed.

## 1.6 QUALITY ASSURANCE

## 1.7 DELIVERY, STORAGE, AND HANDLING

- 1.7.1 Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 10 deg C (50 deg F) or more than 32 deg C (90 deg F).

## 1.8 FIELD CONDITIONS

- 1.8.1 Maintain ambient temperatures within range recommended by manufacturer, but not less than 21 deg C (70 deg F) or more than 35 deg C (95 deg F), in spaces to receive resilient products during the following time periods:
  - 1.8.1.1 48 hours before installation.
  - 1.8.1.2 During installation.
  - 1.8.1.3 48 hours after installation.
- 1.8.2 After installation and until Substantial Performance of the Work, maintain ambient temperatures within range recommended by manufacturer, but not less than 13 deg C (55 deg F) or more than 35 deg C (95 deg F).
- 1.8.3 Install resilient products after other finishing operations, including painting, have been completed.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- 2.1.1 Products from the following manufacturers may be acceptable for inclusion into The Work, provided they meet requirements of Contract Documents.
  - 2.1.1.1 AB; American Biltrite.
  - 2.1.1.2 Armstrong World Industries, Inc.
  - 2.1.1.3 Flexco.
  - 2.1.1.4 Johnsonite; A Tarkett Company.
  - 2.1.1.5 Mondo Rubber International, Inc.
  - 2.1.1.6 Nora Systems, Inc.
  - 2.1.1.7 Roppe Corporation, USA.

### 2.2 PERFORMANCE REQUIREMENTS

- 2.2.1 Provide Products free from blisters, cracks, chipped edges and corners, embedded foreign matter or other defects as required to complete flooring installation and to meet following minimum requirements:
  - 2.2.1.1 Chemical resistance (ASTM F925): Pass
  - 2.2.1.2 Fire-Test-Response Characteristics:

- .1 Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm per ASTM E648.

## 2.3 THERMOPLASTIC-RUBBER BASE

- 2.3.1 Material Tag: This item is noted as "BS#" on Drawings and Schedules.
- 2.3.2 Product Standard: ASTM F1861, Type TP (rubber, thermoplastic).
  - 2.3.2.1 Group: I (solid, homogeneous).
  - 2.3.2.2 Style and Location:
    - .1 Style A, Cove: Provide in areas with resilient flooring.
- 2.3.3 Thickness: Not less than 3.2 mm (0.125 inch).
- 2.3.4 Height: Refer to Finish Schedule on Drawings
- 2.3.5 Lengths: Cut lengths 1219 mm (48 inches) long or coils in manufacturer's standard length.
- 2.3.6 Outside Corners: Job formed or preformed.
- 2.3.7 Inside Corners: Job formed or preformed.
- 2.3.1 Colours: Refer to Finish Schedule on Drawings.
- 2.3.2 Basis-Of-Design: Refer to Finish Schedule on Drawings.

## 2.4 INSTALLATION MATERIALS

- 2.4.1 Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by resilient-product manufacturer for applications indicated.
- 2.4.2 Adhesives: Water-resistant type recommended by resilient-product manufacturer for resilient products and substrate conditions indicated.
- 2.4.3 Metal Edge Strips: Extruded aluminum with mill finish of width shown, of height required to protect exposed edges of flooring, and in maximum available lengths to minimize running joints.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- 3.1.1 Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
  - 3.1.1.1 Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.
- 3.1.2 Proceed with installation only after unsatisfactory conditions have been corrected.
  - 3.1.2.1 Installation of resilient products indicates acceptance of surfaces and conditions.

### 3.2 PREPARATION

- 3.2.1 Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.
- 3.2.2 Ensure substrates are permanently dry, clean, smooth, and structurally sound. Surfaces must be free of dust, loose particles, solvents, paint, grease, oil, wax, alkali, sealing/curing compounds, old adhesive, and any other foreign material, which could affect the installation and adhesive bond to substrate.
- 3.2.3 Fill cracks, holes, depressions and similar irregularities in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.
- 3.2.4 Do not install resilient products until they are the same temperature as the space where they are to be installed.
  - 3.2.4.1 At least 48 hours in advance of installation, move resilient products and installation materials into spaces where they will be installed.
- 3.2.5 Immediately before installation, sweep and vacuum clean substrates to be covered by resilient products.

### 3.3 RESILIENT BASE INSTALLATION

- 3.3.1 Comply with manufacturer's written instructions for installing resilient base.
- 3.3.2 Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.
- 3.3.3 Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned.
- 3.3.4 Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates. Use manufacturer's recommended adhesives and trowels for substrates encountered.
- 3.3.5 Do not stretch resilient base during installation.
- 3.3.6 On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.
- 3.3.7 Preformed Corners: Install preformed corners before installing straight pieces.
- 3.3.8 Job-Formed Corners:
  - 3.3.8.1 Outside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 76 mm (3 inches) in length.
    - .1 Form without producing discoloration (whitening) at bends.
  - 3.3.8.2 Inside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 76 mm (3 inches)() in length.
    - .1 Miter or cope corners to minimize open joints.

### 3.4 RESILIENT ACCESSORY INSTALLATION

- 3.4.1 Comply with manufacturer's written instructions for installing resilient accessories.



- 3.4.2 Resilient Moulding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of floor covering that would otherwise be exposed. Center transitions in cased openings and under door leafs at door openings unless indicated otherwise.

### 3.5 CLEANING AND PROTECTION

- 3.5.1 Comply with manufacturer's written instructions for cleaning and protecting resilient products.
- 3.5.2 Perform the following operations immediately after completing resilient-product installation:
- 3.5.2.1 Remove adhesive and other blemishes from exposed surfaces.
  - 3.5.2.2 Sweep and vacuum horizontal surfaces thoroughly.
  - 3.5.2.3 Damp-mop horizontal surfaces to remove marks and soil.
- 3.5.3 Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
- 3.5.4 Cover resilient products subject to wear and foot traffic until Substantial Performance of the Work.

END OF SECTION

## **PART 1 GENERAL**

### **1.1 GENERAL INSTRUCTIONS**

- 1.1.1 Read and conform to: The general provisions of the Contract, including General and Supplementary Conditions; and the requirements of Division 01 Specifications and any additional documents referred to in this Section.

### **1.2 SUMMARY**

- 1.2.1 Provide labour, materials, products, equipment and services to complete the RESILIENT RUBBER FLOORING work specified herein. This includes, but is not necessarily limited, to:
- 1.2.1.1 Resilient rubber floor tile.
  - 1.2.1.2 Prefabricated cove base.
  - 1.2.1.3 Auxiliary materials required for a complete installation.
  - 1.2.1.4 Reducing strips and thresholds at junction with adjacent finishes.
- 1.2.2 Related Requirements: Specifications throughout all Divisions of the Project shall be read as a whole, and may be directly applicable to this Section. Related requirements provided below are for convenience purposes only.
- 1.2.2.1 Section 09 65 13, Resilient Base and Accessories for resilient base, reducer strips, and other accessories installed with resilient rubber floor covering.

### **1.3 REFERENCES**

- 1.3.1 Reference Standards: Unless otherwise indicated in this Section or the Building Code, the latest published editions of reference standards as of the Project's Bid Closing deadline apply. Refer to 01 42 19 - Reference Standards.

### **1.4 ADMINISTRATIVE REQUIREMENTS**

- 1.4.1 Pre-Installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation and floor care recommendations and manufacturer's warranty requirements.

### **1.5 SUBMITTALS**

- 1.5.1 Product Data: Submit product data in accordance with Division 01 for each type of product indicated.
- 1.5.1.1 Submit manufacturer's instructions, printed product literature and data sheets for the RESILIENT RUBBER FLOORING work and include product characteristics, performance criteria, physical size, finish and limitations
- 1.5.2 Shop Drawings: Submit Shop Drawings in accordance with Division 01 for each type of resilient rubber flooring.

- 1.5.2.1 Include flooring layouts, locations of seams, coving details, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.
- 1.5.2.2 Show details of special patterns.
- 1.5.2.3 Show treatment where flooring meets dissimilar materials and all other special conditions.
- 1.5.2.4 Submit diagram of areas and results showing location and results of each preconstruction test.
- 1.5.3 Samples: Submit samples in accordance with Division 01 for the following:
  - 1.5.3.1 Each exposed product and for each colour and pattern specified in manufacturer's standard size, but not less than 150 mm (6-inch) square sections.

## 1.6 CLOSEOUT SUBMITTALS

- 1.6.1 Maintenance Data: Submit maintenance data in accordance with Division 01, including registered warranty certificates, for each type of floor covering to include in maintenance manuals.

## 1.7 MAINTENANCE MATERIAL SUBMITTALS

- 1.7.1 Supply extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1.7.1.1 Floor Tile: Supply one box for every 50 boxes or fraction thereof, of each type, colour, and pattern of floor tile installed, or equivalent to two percent of quantity installed.
  - 1.7.1.2 Accessories: No less than 3 linear m (10 linear feet) for each 500 linear feet or fraction thereof each different type and color installed.

## 1.8 QUALITY ASSURANCE

- 1.8.1 Installer Qualifications: An entity that employs installers and supervisors who are trained or certified by flooring manufacturer and who are competent in techniques required by manufacturer for flooring installation and seaming methods indicated with not less than five years' experience.
  - 1.8.1.1 Submit proof of training upon request.
- 1.8.2 Single Source Responsibility: Ensure primary materials provided in this Section are obtained from one source by a single manufacturer and secondary materials are obtained from sources recommended by primary materials manufacturers.
- 1.8.3 Mock-ups: Build mock-ups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.
  - 1.8.3.1 Coordinate mock-ups in this Section with mock-ups specified in other Sections.
    - .1 Size: Minimum 10 sq. m (100 sq. ft.) for each type, colour, and pattern in locations directed by Consultant.

- 1.8.3.2 Approval of mock-ups does not constitute approval of deviations from the Contract Documents contained in mock-ups unless Consultant specifically approves such deviations in writing.
- 1.8.3.3 Subject to compliance with requirements, reviewed mock-ups may become part of the completed Work if undisturbed at time of Substantial Performance of the Work.

## 1.9 DELIVERY, STORAGE, AND HANDLING

- 1.9.1 Deliver and store materials undamaged in original wrappings or containers, with manufacturer's labels and seals intact. Store materials in warm and dry area.
- 1.9.2 Store flooring and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 18 deg C (65 deg F) or more than 32 deg C (90 deg F).
  - 1.9.2.1 Floor Tile: Store on flat surfaces.
- 1.9.3 Store adhesive on site 48 hours prior to installation
- 1.9.4 Ensure adequate ventilation is provided during installation and curing of materials.
- 1.9.5 Avoid high humidity, cold drafts and abrupt temperature changes.

## 1.10 FIELD CONDITIONS

- 1.10.1 Maintain ambient temperatures within range recommended by manufacturer, but not less than 18 deg C (65 deg F) or more than 30 deg C (85 deg F), with relative humidity between 35% and 55%, in spaces to receive flooring during the following periods:
  - 1.10.1.1 48 hours before installation.
  - 1.10.1.2 During installation.
  - 1.10.1.3 48 hours after installation.
- 1.10.2 Close spaces to traffic during flooring installation.
- 1.10.3 Close spaces to traffic for 72 hours after flooring installation.
- 1.10.4 Install flooring after other finishing operations, including painting, have been completed.
- 1.10.5 Do not begin substrate evaluation and preparation until stable, conditioned environments have been established as described in this section.
- 1.10.6 Areas to receive flooring must have adequate lighting to allow for proper inspection and preparation of the substrate, installation of the flooring and final inspection.
- 1.10.7 Field Measurements: Verify actual measurements and openings by field measurements before fabrication. Show recorded measurements on Shop Drawings. Coordinate field measurements and fabrication schedule with construction progress to avoid construction delays.

## 1.11 WARRANTY

- 1.11.1 Extended Warranty: Provide manufacturer's full system warranty which includes repair or replacement of flooring installations that fail in materials or workmanship within specified warranty period.
- 1.11.1.1 Material Warranty: 5 years from date of Substantial Performance of the Work.
- 1.11.1.2 Failures include, but not limited to, premature wear, tearing, cracking, separation, deterioration or loosening from substrate, seam failure, ripples, bubbling or puckering. Upon notification of such installation deficiencies, within warranty period, make necessary repairs or replacement at no cost to Owner.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- 2.1.1 Products from the following manufacturers may be acceptable for inclusion into The Work, provided they meet requirements of Contract Documents.
- 2.1.1.1 Tarkett
- 2.1.1.2 Mondo America Inc.;
- 2.1.1.3 Nora Rubber Flooring;
- 2.1.1.4 American Bilrite;
- 2.1.1.5 Approved equivalent.

### 2.2 PERFORMANCE REQUIREMENTS

- 2.2.1 Provide Products free from blisters, cracks, chipped edges and corners, embedded foreign matter or other defects as required to complete flooring installation and to meet following minimum requirements:
- 2.2.1.1 Static load limit (ASTM F970):  $\geq 250$  psi
- 2.2.1.2 Hardness (ASTM F1344):  $\geq 85$  measured using Shore, Type A durometer per ASTM D2240.
- 2.2.1.3 Chemical resistance (ASTM F925): Pass
- 2.2.1.4 Resistance to Fungi Growth: No growth when test in accordance with ASTM G21.
- 2.2.1.5 Fire-Test-Response Characteristics:
- .1 Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm per ASTM E648.
- .2 Smoke Density: not more than 450 per ASTM E662.
- 2.2.1.6 Slip Resistance: Provide materials having a minimum Dynamic Coefficient of Friction (DCOF) of 0.42 in accordance with ANSI A326.3 when tested using the BOT 3000 Digital Tribometer and with minimum 0.6 coefficient of friction in accordance with ASTM D2047.

## 2.3 RESILIENT RUBBER FLOOR TILE

- 2.3.1 Material Tag: This item is noted as “FL-2” and “FL-4” on Drawings and Schedules.
- 2.3.2 Resilient rubber Floor Tile: ASTM F1344, resilient rubber floor with following characteristics.
  - 2.3.2.1 Nominal Floor Tile Size: 610 by 610 mm (24 by 24 inches).
- 2.3.3 Wearing Surface (as applicable): Smooth. Ensure appearance of rubber floor covering can remain consistent and comparable to original appearance after removal of 0.5 mm (0.02”) of floor thickness.
- 2.3.4 Thickness: Minimum 3.17 mm (0.125 inches) Large-size tiles can be heat welded. If required, insert requirements for heat-welding bead for seamless installation.
- 2.3.5 Colours and Patterns: refer to Finish Schedule on Drawings
- 2.3.6 Topcoat: Provide pre-sealed and pre-finished UV-cured, protective, liquid floor coating as standard by rubber flooring manufacturer which does not require additional sealing after installation.
- 2.3.7 Basis of Design: Refer to Finish Schedule on Drawings

## 2.4 INSTALLATION MATERIALS

- 2.4.1 Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by resilient rubber flooring manufacturer for applications indicated. Do not use gypsum-based materials.
- 2.4.2 Adhesives: Water-resistant type recommended by flooring and adhesive manufacturers to suit products and substrate conditions indicated.
  - 2.4.2.1 For areas designated for foot traffic and light to moderate rolling loads (with little or no pivoting) such as consultation/exam rooms and offices, patient rooms, daycare and nursing rooms and kitchenettes/break rooms and similar locations:
    - .1 Provide one-part, solvent-free, low VOC acrylic adhesive “MP 1000” by Mondo America Inc. or approved equivalent recommended in writing by floor covering manufacturer and approved by Consultant in order to authenticate floor covering warranties.
  - 2.4.2.2 For areas designated for intermittent wetting, intense traffic, heavy rolling loads and heavy static loads.
    - .1 Provide two-part, solvent-free, low VOC epoxy adhesive “EP 55” by Mondo America Inc. or approved equivalent recommended in writing by floor covering manufacturer and approved by Consultant in order to authenticate floor covering warranties.
- 2.4.3 Moisture-Vapour Emission (MVE) Control System: ASTM F3010-qualified, fluid-applied, two-component, epoxy-resin, membrane-forming system; formulated for application on concrete substrates to reduce MVER to level required for installation of floor coverings indicated and acceptable to manufacturers of floor covering products indicated, including adhesives.

- 2.4.3.1 MVE-Control System Capabilities: Capable of suppressing MVE without failure where installed on concrete that exhibits the following conditions:
  - .1 Relative Humidity: Up to 100 percent when tested according to ASTM F2170 using in situ probes.
- 2.4.3.2 Substrate Primer: Provide MVE-control system manufacturer's concrete-substrate primer if required for system indicated by substrate conditions.
- 2.4.3.3 Acceptable Products: Approved proprietary moisture control system recommended in writing by floor covering manufacturer and approved by Consultant in order to authenticate floor covering warranties.
- 2.4.4 Resilient Edge Strips: Provide resilient cap for cove resilient floor covering, nosings for resilient floor covering, reducer strips, and transition strips with tapered or bull nose edge not less than 25 mm (1") wide, colored to match flooring or as selected by Consultant from available colours.
- 2.4.5 Metal Edge Strips: Strips shall be of width shown and of required thickness to protect the exposed edge of the flooring with units in maximum length available to minimize the number of joints.

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- 3.1.1 Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
  - 3.1.1.1 Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of flooring.
  - 3.1.1.2 Minimum tolerance required prior to application is 3 mm in 3 m (1/8 inch in 10-foot radius) using straight edge measurements.
- 3.1.2 Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 PREPARATION**

- 3.2.1 Prepare substrates according to resilient rubber flooring manufacturer's written instructions to ensure adhesion of flooring.
- 3.2.2 Concrete Substrates: Prepare according to ASTM F710.
  - 3.2.2.1 Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
  - 3.2.2.2 Remove substrate coatings and other substances that are incompatible with flooring adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by resilient rubber flooring manufacturer. Do not use solvents.

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- 3.2.2.3 Concrete substrates must be cured per the concrete manufacturer's recommendations with minimum compressive strength of 21 MPa (3,000 psi) and minimum dry density of 2400 kg/cu. m (150 lbs/cu. ft). Refer to Division 3 for patching, repairing crack materials and leveling compounds with Portland cement-based compounds and for cast-in-place concrete, concrete toppings, and cementitious underlayments.
- 3.2.2.4 Alkalinity and Adhesion Testing: Perform tests recommended by resilient rubber flooring manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 7 or more than 10 pH.
- 3.2.2.5 Bond Testing: Conduct testing in accordance with the manufacturer's recommendations in various locations throughout area where flooring is to be installed. Perform sufficient tests to evaluation of entire area where material will be installed.
- 3.2.2.6 Moisture Testing:
- .1 Perform tests so that each test area does not exceed 93 sq. m (1000 sq. ft.). Perform no fewer than three tests for the first 93 sq. m. (1000 sq. ft.) and an additional test for each additional 93 sq. m. (1000 sq. ft). Ensure test areas are evenly spaced.
  - .2 Anhydrous Calcium Chloride Test: ASTM F1869. Proceed with installation only after substrates have maximum moisture-vapour emission rate of 1.36 kg of water/93 sq. m (3 lb of water/1000 sq. ft.) in 24 hours, unless otherwise recommended in writing by manufacturer.
  - .3 Relative Humidity Test: Using in-situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement, unless otherwise recommended in writing by manufacturer.
  - .4 Do not proceed with installation until moisture problems have been corrected.
- 3.2.3 Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.
- 3.2.4 Do not install flooring until materials are the same temperature as space where they are to be installed.
- 3.2.4.1 At least 72 hours in advance of installation, move flooring and installation materials into spaces where they will be installed.
- 3.2.5 Sweep and vacuum clean substrates to be covered by flooring immediately before installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation, and dust. Proceed with installation only after unsatisfactory conditions have been corrected.



### 3.3 INSTALLATION, GENERAL

- 3.3.1 Comply with manufacturer's product technical data, including product technical bulletins, installation recommendations and floor care recommendations.
- 3.3.2 Scribe and cut flooring to butt neatly and tightly to vertical surfaces and permanent fixtures, including built-in furniture, cabinets, pipes, outlets, edgings, thresholds, door frames, and nosings.
- 3.3.3 Extend flooring into toe spaces, door reveals, closets, and similar openings.
- 3.3.4 Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on flooring as marked on substrates. Use chalk or other nonpermanent marking device.
- 3.3.5 Install flooring on covers for telephone and electrical ducts and similar items in installation areas. Maintain overall continuity of colour and pattern between pieces of flooring installed on covers and adjoining flooring. Tightly adhere flooring edges to substrates that abut covers and to cover perimeters.
- 3.3.6 Adhere flooring to substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.
  - 3.3.6.1 Mix and apply adhesives to manufacturer's recommendations. Apply adhesive uniformly using recommended trowel. Do not spread more adhesive than can be covered by flooring before initial set takes place (while adhesive is still "wet").
  - 3.3.6.2 Immediately roll the flooring in all directions using a 45 kg (100 lb) roller for tile flooring to ensure proper adhesive transfer. Additional rolling may be required during adhesive setup to the material is flat and fully adhered.
  - 3.3.6.3 Use three-section wall roller or steel seam roller at walls, under toe kicks or anywhere where full weight of roller or push bar cannot access or be applied.

### 3.4 RESILIENT RUBBER FLOOR TILE INSTALLATION

- 3.4.1 Lay out resilient rubber floor tiles from center marks established with principal walls, discounting minor offsets, so floor tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.
- 3.4.2 Match resilient rubber floor tiles for colour and pattern by selecting tiles from cartons in same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed floor tiles.
- 3.4.3 Lay floor tiles square with room axis or in pattern indicated.

### 3.5 CLEANING AND PROTECTION

- 3.5.1 Comply with manufacturer's written instructions for cleaning and protecting resilient rubber flooring.
- 3.5.2 Remove adhesive and other blemishes from surfaces immediately after completing resilient rubber flooring installation.

- 3.5.3 As soon as possible, but not less than 24 hours after completing resilient rubber flooring installation perform the following:
  - 3.5.3.1 Sweep and vacuum surfaces thoroughly.
  - 3.5.3.2 Damp-mop surfaces to remove marks and soil.
- 3.5.4 Protect resilient rubber flooring from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
- 3.5.5 Cover resilient rubber flooring using minimum 6 mm (1/4 inch) thick hardboards or approved equivalent floor cover acceptable to Consultant until Substantial Performance of the Work.

### **3.6 FIELD QUALITY CONTROL**

- 3.6.1 Manufacturer's Field Services: Provide manufacturer's field service consisting of product use recommendations and periodic site visit for inspection of product installation in accordance with manufacturer's recommendations.

### **3.7 DEMONSTRATION AND TRAINING**

- 3.7.1 Engage manufacturer to demonstrate cleaning and maintenance procedures to Owner in accordance with requirements of Section 01 70 00. Review methods and procedures related to floor care and warranty requirements.
- 3.7.2 Include in Contract Price, cost for initial maintenance procedures, and execute procedures after flooring installation as recommended by flooring manufacturer. Initial maintenance to be conducted by installer or floor care professionals who are certified by manufacturer.

END OF SECTION

## **PART 1 GENERAL**

### **1.1 GENERAL INSTRUCTIONS**

- 1.1.1 Read and conform to: The general provisions of the Contract, including General and Supplementary Conditions; and the requirements of Division 01 Specifications and any additional documents referred to in this Section.

### **1.2 SUMMARY**

- 1.2.1 Provide labour, materials, products, equipment and services to complete the RESILIENT VINYL FLOORING work specified herein. This includes, but is not necessarily limited, to:
- 1.2.1.1 Vinyl floor tile.
  - 1.2.1.2 Prefabricated cove base.
  - 1.2.1.3 Auxiliary materials required for a complete installation.
  - 1.2.1.4 Reducing strips and thresholds at junction with adjacent finishes.
- 1.2.2 Related Requirements: Specifications throughout all Divisions of the Project shall be read as a whole, and may be directly applicable to this Section. Related requirements provided below are for convenience purposes only.
- 1.2.2.1 Section 09 65 13, Resilient Base and Accessories for resilient base, reducer strips, and other accessories installed with vinyl floor covering.

### **1.3 REFERENCES**

- 1.3.1 Reference Standards: Unless otherwise indicated in this Section or the Building Code, the latest published editions of reference standards as of the Project's Bid Closing deadline apply. Refer to 01 42 19 - Reference Standards.

### **1.4 ADMINISTRATIVE REQUIREMENTS**

- 1.4.1 Pre-Installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation and floor care recommendations and manufacturer's warranty requirements.
- 1.4.2 Coordination: ensure requirements for concrete subfloor preparation are compatible with requirements of this Section. Ensure following meet acceptable criteria to ensure proper performance floor covering work:
- 1.4.2.1 floor flatness and floor levelness requirements for flooring installation and their acceptability by flooring manufacturer;
  - 1.4.2.2 surface texture of finished floor required for flooring installation;
  - 1.4.2.3 acceptable approaches to remediation of high moisture and high pH floors;
  - 1.4.2.4 adhesive application and floor covering installation

### **1.5 SUBMITTALS**

- 1.5.1 Product Data: Submit product data in accordance with Division 01 for each type of product indicated.

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- 1.5.1.1 Submit manufacturer's instructions, printed product literature and data sheets for the RESILIENT VINYL FLOORING work and include product characteristics, performance criteria, physical size, finish and limitations
  - 1.5.2 Shop Drawings: Submit Shop Drawings in accordance with Division 01 for each type of vinyl flooring.
    - 1.5.2.1 Include flooring layouts, locations of seams, coving details, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.
    - 1.5.2.2 Show details of special patterns.
    - 1.5.2.3 Show treatment where flooring meets dissimilar materials and all other special conditions.
    - 1.5.2.4 Submit diagram of areas and results showing location and results of each preconstruction test.
  - 1.5.3 Samples: Submit samples in accordance with Division 01 for the following:
    - 1.5.3.1 Each exposed product and for each colour and pattern specified in manufacturer's standard size, but not less than 150 mm (6-inch) square sections.
    - 1.5.3.2 Heat-Welding Bead: Include manufacturer's standard-size Samples, but not less than 230 mm (9 inches) long, of each colour required.
  - 1.6 CLOSEOUT SUBMITTALS**
    - 1.6.1 Maintenance Data: Submit maintenance data in accordance with Division 01 for each type of floor covering to include in maintenance manuals.
  - 1.7 MAINTENANCE MATERIAL SUBMITTALS**
    - 1.7.1 Supply extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
      - 1.7.1.1 Floor Tile: Supply one box for every 50 boxes or fraction thereof, of each type, colour, and pattern of floor tile installed.
      - 1.7.1.2 Accessories: No less than 3 linear m (10 linear feet) for each 500 linear feet or fraction thereof each different type and color installed.
  - 1.8 QUALITY ASSURANCE**
    - 1.8.1 Installer Qualifications: An entity that employs installers and supervisors who are trained or certified by flooring manufacturer and who are competent in techniques required by manufacturer for flooring installation and seaming methods indicated with not less than five years' experience.
      - 1.8.1.1 Submit proof of training upon request.
    - 1.8.2 Single Source Responsibility: Ensure primary materials provided in this Section are obtained from one source by a single manufacturer and secondary materials are obtained from sources recommended by primary materials manufacturers.

- 1.8.3 Mock-ups: Build mock-ups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.
  - 1.8.3.1 Coordinate mock-ups in this Section with mock-ups specified in other Sections.
    - .1 Size: Minimum 10 sq. m (100 sq. ft.) for each type, colour, and pattern in locations directed by Consultant and using lighting conditions which represent actual final lighting conditions of the finished project.
  - 1.8.3.2 Approval of mock-ups does not constitute approval of deviations from the Contract Documents contained in mock-ups unless Consultant specifically approves such deviations in writing.
  - 1.8.3.3 Subject to compliance with requirements, reviewed mock-ups may become part of the completed Work if undisturbed at time of Substantial Performance of the Work.

## 1.9 DELIVERY, STORAGE, AND HANDLING

- 1.9.1 Deliver and store materials undamaged in original wrappings or containers, with manufacturer's labels and seals intact. Store materials in warm and dry area.
- 1.9.2 Store flooring and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 18 deg C (65 deg F) or more than 32 deg C (90 deg F).
  - 1.9.2.1 Floor Tile: Store on flat surfaces.

## 1.10 FIELD CONDITIONS

- 1.10.1 Maintain ambient temperatures within range recommended by manufacturer, but not less than 21 deg C (70 deg F) or more than 35 deg C (95 deg F), in spaces to receive flooring during the following periods:
  - 1.10.1.1 7 days before installation.
  - 1.10.1.2 During installation.
  - 1.10.1.3 7 days after installation.
- 1.10.2 After installation and until Substantial Performance of the Work, maintain ambient temperatures within range recommended by manufacturer, but not less than 18 deg C (65 deg F) or more than 35 deg C (95 deg F).
- 1.10.3 Close spaces to traffic during flooring installation.
- 1.10.4 Close spaces to traffic for 72 hours after flooring installation.
- 1.10.5 Install flooring after other finishing operations, including painting, have been completed.
- 1.10.6 Do not begin substrate evaluation and preparation until stable, conditioned environments have been established as described in this section.
- 1.10.7 Areas to receive flooring must have adequate lighting to allow for proper inspection and preparation of the substrate, installation of the flooring and final inspection.

1.10.8 Field Measurements: Verify actual measurements and openings by field measurements before fabrication. Show recorded measurements on Shop Drawings. Coordinate field measurements and fabrication schedule with construction progress to avoid construction delays.

## 1.11 WARRANTY

1.11.1 Extended Warranty: Provide manufacturer's full system warranty which includes repair or replacement of flooring installations that fail in materials or workmanship within specified warranty period.

1.11.1.1 Warranty Period:

- .1 Flooring Material Warranty: 10 years from date of Substantial Performance of the Work.
- .2 Workmanship Warranty: 2 years from date of Substantial Performance of the Work.

1.11.1.2 Failures include, but not limited to, tearing, cracking, separation, deterioration or loosening from substrate, seam failure, ripples, bubbling or puckering. Upon notification of such installation deficiencies, within warranty period, make necessary repairs or replacement at no cost to Owner.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

2.1.1 Products from the following manufacturers may be acceptable for inclusion into The Work, provided they meet requirements of Contract Documents.

- 2.1.1.1 Altro Limited;
- 2.1.1.2 Armstrong Flooring, Inc;
- 2.1.1.3 Forbo Flooring, Inc.;
- 2.1.1.4 Polyflor;
- 2.1.1.5 Tarkett Inc.;

### 2.2 PERFORMANCE REQUIREMENTS

2.2.1 Provide Products free from blisters, cracks, chipped edges and corners, embedded foreign matter or other defects as required to complete flooring installation and to meet following minimum requirements:

- 2.2.1.1 Static load limit (ASTM F970):  $\geq 250$  psi
- 2.2.1.2 Chemical resistance (ASTM F925): Pass
- 2.2.1.3 Resistance to Fungi Growth: No growth when test in accordance with ASTM G21.
- 2.2.1.4 Fire-Test-Response Characteristics:
  - .1 Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm per ASTM E648.
  - .2 Smoke Density: not more than 450 per ASTM E662.

- .3 Flammability & Smoke (CAN/ULC S102.2): not more than 300 (Flame Spread) and not more than 500 (Smoke Developed)
- 2.2.1.5 Slip Resistance: Provide materials having a minimum Dynamic Coefficient of Friction (DCOF) of 0.42 in accordance with ANSI A326.3 when tested using the BOT 3000 Digital Tribometer and with minimum 0.6 coefficient of friction in accordance with ASTM D2047.

## 2.3 SOLID VINYL FLOOR TILE/LUXURY VINYL TILE

- 2.3.1 Material Tag: This item is noted as “FL1”, FL3”, and “FL5” on Drawings and Schedules.
- 2.3.2 Vinyl Floor Tile: ASTM F 1700, Class I (monolithic) or Class II (surface decorated) or Class III (printed film) with minimum wear layer thickness of 0.5 mm (0.020 inch).
  - 2.3.2.1 Nominal Floor Tile Size: 184 mm x 1220 mm (7.2 inch x 48 inches) Plank
- 2.3.3 Thickness: 4.5mm (0.177 inches)
- 2.3.4 Colours and Patterns: Refer to Finish Schedule on Drawings
- 2.3.5 Topcoat: Provide pre-sealed and pre-finished UV-cured, protective, liquid floor coating as standard by vinyl flooring manufacturer which does not require additional sealing after installation.
- 2.3.6 Basis-of-Design: Refer to Finish Schedule on Drawings

## 2.4 INSTALLATION MATERIALS

- 2.4.1 Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based or blended hydraulic-cement-based formulation provided or approved by vinyl flooring manufacturer for applications indicated. Do not use gypsum-based materials.
- 2.4.2 Adhesives: Water-resistant type recommended by flooring and adhesive manufacturers to suit products and substrate conditions indicated.
  - 2.4.2.1 For areas designated for foot traffic and light to moderate rolling loads (with little or no pivoting) and where drains do not exist such as daycare, and kitchenettes/break rooms and similar locations:
    - .1 Provide one-part, solvent-free, low VOC acrylic adhesive recommended in writing by floor covering manufacturer and approved by Consultant in order to authenticate floor covering warranties.
  - 2.4.2.2 For areas designated for heavy traffic, moderate rolling loads and heavy static loads such as corridors:
    - .1 Provide two-part, solvent-free, low VOC polyurethane or epoxy adhesive recommended in writing by floor covering manufacturer and approved by Consultant in order to authenticate floor covering warranties.
- 2.4.3 Prefabricated-Flash-Cove-Base: Fabricated from same sheet flooring material and dye lots in maximum practical lengths.

- 2.4.4 MVE-Control System: ASTM F3010-qualified, fluid-applied, two-component, epoxy-resin, membrane-forming system; formulated for application on concrete substrates to reduce MVER to level required for installation of floor coverings indicated and acceptable to manufacturers of floor covering products indicated, including adhesives.
- 2.4.4.1 MVE-Control System Capabilities: Capable of suppressing MVE without failure where installed on concrete that exhibits the following conditions:
- .1 Relative Humidity: Up to 100 percent when tested according to ASTM F2170 using in situ probes.
- 2.4.4.2 Substrate Primer: Provide MVE-control system manufacturer's concrete-substrate primer if required for system indicated by substrate conditions.
- 2.4.4.3 Acceptable Products: Approved proprietary moisture control system recommended in writing by floor covering manufacturer and approved by Consultant in order to authenticate floor covering warranties.
- 2.4.5 Resilient Edge Strips: Provide resilient cap for cove resilient floor covering, nosings for resilient floor covering, reducer strips, and transition strips with tapered or bull nose edge not less than 25 mm (1") wide, colored to match flooring or as selected by Consultant from available colours.
- 2.4.6 Metal Edge Strips: Strips shall be of width shown and of required thickness to protect the exposed edge of the flooring with units in maximum length available to minimize the number of joints.

## **PART 3 EXECUTION**

### **3.1 EXAMINATION**

- 3.1.1 Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- 3.1.1.1 Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of flooring.
- 3.1.2 Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.2 PREPARATION**

- 3.2.1 Prepare substrates according to vinyl flooring manufacturer's written instructions to ensure adhesion of flooring.
- 3.2.2 Concrete Substrates: Prepare according to ASTM F710.
- 3.2.2.1 Verify that substrates are dry and free of curing compounds, sealers, and hardeners.



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- 3.2.2.2 Remove substrate coatings and other substances that are incompatible with flooring adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by vinyl flooring manufacturer. Do not use solvents.
- 3.2.2.3 Concrete substrates must be cured per the concrete manufacturer's recommendations with minimum compressive strength of 21 MPa (3,000 psi) and minimum dry density of 2400 kg/cu. m (150 lbs/cu. ft). Refer to Division 3 for patching, repairing crack materials and leveling compounds with Portland cement-based compounds and for cast-in-place concrete, concrete toppings, and cementitious underlayments.
- 3.2.2.4 Alkalinity and Adhesion Testing: Perform tests recommended by vinyl flooring manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 5 or more than 10 pH.
- 3.2.2.5 Bond Testing: Conduct testing in accordance with the manufacturer's recommendations in various locations throughout area where flooring is to be installed. Perform sufficient tests to evaluation of entire area where material will be installed.
- 3.2.2.6 Substrate Porosity Testing: Conduct testing in accordance with ASTM F3131 and manufacturer's recommendations in various locations throughout area where flooring is to be installed. Perform sufficient tests to evaluation of entire area where material will be installed.
- 3.2.2.7 Moisture Testing:
- .1 Perform tests so that each test area does not exceed 93 sq. m (1000 sq. ft.), and perform no fewer than three tests in each installation area and with test areas evenly spaced in installation areas.
  - .2 Anhydrous Calcium Chloride Test: ASTM F1869. Proceed with installation only after substrates have maximum moisture-vapour emission rate of 1.36 kg of water/93 sq. m (3 lb of water/1000 sq. ft.) in 24 hours.
  - .3 Relative Humidity Test: Using in-situ probes, ASTM F2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.
  - .4 Do not proceed with installation until moisture problems have been corrected.
- 3.2.3 Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.
- 3.2.4 Do not install flooring until materials are the same temperature as space where they are to be installed.
- 3.2.4.1 At least 72 hours in advance of installation, move flooring and installation materials into spaces where they will be installed.

- 3.2.5 Immediately before installation, sweep and vacuum clean substrates to be covered by flooring.

### **3.3 APPLICATION OF MVE-CONTROL SYSTEM**

- 3.3.1 Apply MVE-control system to all below-grade slabs and slabs-on-grade (regardless of pre-installation moisture testing results) and to other locations where moisture contents are above those recommended by manufacturer at time of installation.
- 3.3.2 Prepare and clean substrates according to MVE-control system manufacturer's written instructions to ensure adhesion of system to concrete.
- 3.3.3 Remove coatings and other substances that are incompatible with MVE-control system and that contain soap, wax, oil, or silicone, using mechanical methods recommended in writing by MVE-control system manufacturer. Do not use solvents.
- 3.3.4 Provide concrete surface profile complying with ICRI 310.2R or CSP 3 by shot blasting using apparatus that abrades the concrete surface with shot, contains the dispensed shot within the apparatus, and recirculates the shot by vacuum pickup.
- 3.3.5 After shot blasting, repair damaged and deteriorated concrete according to MVE-control system manufacturer's written instructions.
- 3.3.6 Protect substrate voids and joints to prevent resins from flowing into or leaking through them.
- 3.3.7 Fill surface depressions and irregularities with patching and leveling material.
- 3.3.8 Fill surface cracks, grooves, control joints, and other nonmoving joints with crack-filling material.
- 3.3.9 Allow concrete to dry, undisturbed, for period recommended in writing by MVE-control system manufacturer after surface preparation, but not less than 24 hours.
- 3.3.10 Before installing MVE-control systems, broom sweep and vacuum prepared concrete.
- 3.3.11 Install MVE-control system according to ASTM F3010 and manufacturer's written instructions to produce a uniform, monolithic surface free of surface deficiencies such as pin holes, fish eyes, and voids.

### **3.4 INSTALLATION, GENERAL**

- 3.4.1 Comply with manufacturer's product technical data, including product technical bulletins, installation recommendations and floor care recommendations.
- 3.4.2 Scribe and cut flooring to butt neatly and tightly to vertical surfaces and permanent fixtures, including built-in furniture, cabinets, pipes, outlets, edgings, thresholds, door frames, and nosings.
- 3.4.3 Extend flooring into toe spaces, door reveals, closets, and similar openings.
- 3.4.4 Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on flooring as marked on substrates. Use chalk or other nonpermanent marking device.

- 3.4.5 Install flooring on covers for telephone and electrical ducts and similar items in installation areas. Maintain overall continuity of colour and pattern between pieces of flooring installed on covers and adjoining flooring. Tightly adhere flooring edges to substrates that abut covers and to cover perimeters.
- 3.4.6 Adhere flooring to substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.
  - 3.4.6.1 Immediately roll the flooring in all directions using a 45 kg (100 lb) roller to ensure proper adhesive transfer. Additional rolling may be required during adhesive setup to the material is flat and fully adhered.
  - 3.4.6.2 Use three-section wall roller or steel seam roller at walls, under toe kicks or anywhere where full weight of 45 kg (100 lb) roller cannot access or be applied.
- 3.4.7 Heat-Welded Seams: For seamless installation, comply with ASTM F1516. Rout joints and heat weld with welding bead to fuse sections permanently into a seamless flooring installation. Prepare, weld, and finish seams to produce surfaces flush with adjoining flooring surfaces.

### 3.5 VINYL FLOOR TILE INSTALLATION

- 3.5.1 Lay out vinyl floor tiles from center marks established with principal walls, discounting minor offsets, so floor tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.
- 3.5.2 Match vinyl floor tiles for colour and pattern by selecting tiles from cartons in same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed floor tiles.
- 3.5.3 Lay floor tiles square with room axis or in pattern indicated.

### 3.6 CLEANING AND PROTECTION

- 3.6.1 Comply with manufacturer's written instructions for cleaning and protecting vinyl flooring.
- 3.6.2 Remove adhesive and other blemishes from surfaces immediately after completing vinyl flooring installation.
- 3.6.3 As soon as possible, but not less than 24 hours after completing vinyl flooring installation perform the following:
  - 3.6.3.1 Sweep and vacuum surfaces thoroughly.
  - 3.6.3.2 Damp-mop surfaces to remove marks and soil.
- 3.6.4 Protect vinyl flooring from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
- 3.6.5 Cover vinyl flooring using minimum 6 mm (1/4 inch) thick hardboards or approved equivalent floor cover acceptable to Consultant until Substantial Performance of the Work.

**3.7 FIELD QUALITY CONTROL**

3.7.1 Manufacturer's Field Services: Provide manufacturer's field service consisting of product use recommendations and periodic site visit for inspection of product installation in accordance with manufacturer's recommendations.

**3.8 DEMONSTRATION AND TRAINING**

3.8.1 Engage manufacturer to demonstrate cleaning and maintenance procedures to Owner in accordance with requirements of Section 01 70 00. Review methods and procedures related to floor care and warranty requirements.

3.8.2 Include in Contract Price, cost for initial maintenance procedures, and execute procedures after flooring installation as recommended by flooring manufacturer. Initial maintenance to be conducted by installer or floor care professionals who are certified by manufacturer.

END OF SECTION

## **PART 1 GENERAL**

### **1.1 GENERAL INSTRUCTIONS**

- 1.1.1 Read and conform to: The general provisions of the Contract, including General and Supplementary Conditions; and the requirements of Division 01 Specifications and any additional documents referred to in this Section.

### **1.2 SUMMARY**

- 1.2.1 Provide labour, materials, products, equipment and services to complete the INTERIOR PAINTING work specified herein. This includes, but is not necessarily limited, to:
- 1.2.1.1 Painting of all interior exposed elements noted on Room Finish Schedule and noted on Drawings including following substrates:
- .1 Concrete masonry units (CMU).
  - .2 Aluminum (not anodized or otherwise coated).
  - .3 Wood.
  - .4 Gypsum board.
- 1.2.1.2 Where an item or surface is not specifically mentioned on Room Finish Schedules or on Drawings, and is not excluded, Provide same finish as similar adjacent materials or surfaces.
- 1.2.1.3 Do not paint excluded components indicated herein.
- 1.2.2 Work Excluded:
- 1.2.2.1 Do not paint pre-finished metal.
- 1.2.2.2 Do not paint chrome, stainless steel, vinyl, plastic laminate and aluminum surfaces throughout unless specified otherwise.
- 1.2.2.3 Do not paint interior surfaces of steel tanks and stacks.
- 1.2.2.4 Do not paint sprayed fire-resistant materials.
- 1.2.2.5 Do not paint equipment furnished completely prime- and finish painted by manufacturer unless required to have field painting over factory finish in order to produce common corporate colour as identified in room finish schedule.
- 1.2.2.6 Do not paint over ULC, FM or other code required labels or equipment identification plates.
- 1.2.3 Related Requirements: Specifications throughout all Divisions of the Project shall be read as a whole, and may be directly applicable to this Section. Related requirements provided below are for convenience purposes only.

### **1.3 REFERENCES**

- 1.3.1 Reference Standards: Unless otherwise indicated in this Section or the Building Code, the latest published editions of reference standards as of the Project's Bid Closing deadline apply. Refer to 01 42 19 - Reference Standards.

## 1.4 DEFINITIONS

- 1.4.1 Gloss Level 1 (Flat or Matte): Not more than 5 units at 60 degrees and 10 units at 85 degrees, according to ASTM D523.
- 1.4.2 Gloss Level 2 (Velvet): Not more than 10 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D523.
- 1.4.3 Gloss Level 3 (Eggshell): 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D523.
- 1.4.4 Gloss Level 4 (Satin): 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D523.
- 1.4.5 Gloss Level 5 (Semi-gloss): 35 to 70 units at 60 degrees, according to ASTM D523.
- 1.4.6 Gloss Level 6 (Gloss): 70 to 85 units at 60 degrees, according to ASTM D523.
- 1.4.7 Exposed: This refers to items visible in completed Work. In case of closets, cabinets and drawers, it includes their interiors.
- 1.4.8 Surface Preparation: This refers to means of cleaning or treating of surface to be painted to ensure best possible bond between surface and painting applied. Surface preparation methods include, but are not limited to:
  - 1.4.8.1 Ensure preparation and workmanship conforms to MPI Painting Manual requirements
  - 1.4.8.2 Removal of surface contaminants that will affect performance of painting including but not limited to: oil, grease, salts, dust, dirt, rust, rust scale, mill scale, and old coatings where applicable.
  - 1.4.8.3 Removal of surface imperfections including without limitations: weld spatter, sharp edges, burrs, silvers, laminations, pits, porosities and crevices.
  - 1.4.8.4 Preparation of surfaces to Provide anchor profile or surface profile to improve mechanical bonding of coating to prepared surface by increasing surface area.
- 1.4.9 Dry location or area: A location not normally subject to dampness.
- 1.4.10 Damp/wet location or area: Location that is normally or periodically subject to condensation of moisture in, on, or adjacent to, Work of this Section. This includes location in which water or other liquid can drip, splash, or flow on or against Work of this Section. This includes, but is not limited to, showers, drying areas, change rooms, kitchen areas, washrooms, and associated vestibules and corridors.

## 1.5 ACTION SUBMITTALS

- 1.5.1 Product Data: Submit product data in accordance with Division 01 for each type of product. Include preparation requirements and application instructions.
  - 1.5.1.1 Submit manufacturer's instructions, printed product literature and data sheets for the INTERIOR PAINTING work and include product characteristics, performance criteria, physical size, finish and limitations

- 1.5.2 Samples: Submit samples in accordance with Division 01 for each type of paint system and in each colour and gloss of topcoat.
  - 1.5.2.1 Submit full range colour sample chips to indicate where colour availability is restricted.
  - 1.5.2.2 Submit Samples (brushouts) on rigid backing, 200 mm (8 inches) square.
    - .1 3 mm (1/8 inch) plate steel for finishes over metal surfaces.
    - .2 13 mm (1/2 inch) plywood for finishes over wood surfaces.
    - .3 50 mm (2 inch) concrete block for finishes over concrete or concrete masonry surfaces.
    - .4 13 mm (1/2 inch) gypsum board for finishes over gypsum board and other smooth surfaces.
  - 1.5.2.3 Step coats on Samples to show each coat required for system.
  - 1.5.2.4 Label each coat of each Sample.
  - 1.5.2.5 Label each Sample for location and application area.
  - 1.5.2.6 Retain reviewed samples on-site to demonstrate acceptable standard of quality for appropriate on-site surface.
- 1.5.3 Product List: Submit product list in accordance with Division 01 for each product indicated on Drawings and Schedules, include the following:
  - 1.5.3.1 Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
  - 1.5.3.2 Printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
  - 1.5.3.3 Colour Numbers
  - 1.5.3.4 MPI Environmentally Friendly Classification System Rating
  - 1.5.3.5 Manufacturer's Safety Data Sheets (SDS)
  - 1.5.3.6 VOC content.

## 1.6 INFORMATIONAL SUBMITTALS

- 1.6.1 Test reports: Provide certified test reports for paint from approved independent testing laboratories, indicating compliance with specifications for specified performance characteristics and physical properties.
  - 1.6.1.1 Lead, cadmium and chromium: presence of and amounts.
  - 1.6.1.2 Mercury: presence of and amounts.
  - 1.6.1.3 Organochlorines and PCBs: presence of and amounts.

## 1.7 CLOSEOUT SUBMITTALS

- 1.7.1 Operation and Maintenance Data: Provide operation and maintenance data for painting materials for incorporation into manual. Include the following cross-referenced to paint system and locations of application areas:
  - 1.7.1.1 Product name, type and use.
  - 1.7.1.2 Manufacturer's product number.
  - 1.7.1.3 Colour names and numbers

1.7.1.4 MPI Environmentally Friendly classification system rating.

## 1.8 MAINTENANCE MATERIAL SUBMITTALS

1.8.1 Supply extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1.8.1.1 Paint: 5 percent, but not less than 3.8 L (1 gal.) of each material and colour applied.

1.8.2 Paint must be boxed and in sealed, unopened cans in undamaged condition, with name of manufacturer, contents, type and colour clearly indicated on a label securely adhered to can.

## 1.9 QUALITY ASSURANCE

1.9.1 Qualifications: Provide work of this Section executed by competent installers with membership in good standing in MPI, OPCA and/or PDCA having a minimum of 5 years' experience in application of Products, systems and assemblies specified and with approval and training of Product manufacturers.

1.9.1.1 Qualified journeypersons as defined by local jurisdiction to be engaged in painting work.

1.9.1.2 Apprentices may be employed provided they work under direct supervision of qualified journeyperson in accordance with trade regulations.

1.9.2 Mockups: Apply mockups of each paint system directed on Site and each colour and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1.9.2.1 Consultant will select one surface to represent surfaces and conditions for application of each paint system specified.

.1 Vertical and Horizontal Surfaces: Provide mock-ups of at least 9 sq. m (100 sq. ft.).

.2 Other Items: Consultant will designate items or areas required.

1.9.2.2 Final approval of colour selections will be based on mockups.

.1 If preliminary colour selections are not approved, apply additional mockups of additional colours selected by Consultant at no added cost to Owner.

1.9.2.3 Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Consultant specifically approves such deviations in writing.

1.9.2.4 Reviewed mockups may become part of the completed Work if undisturbed at time of Substantial Performance of the Work.

1.9.3 Single Source Responsibility: Ensure primary materials provided in this Section are obtained from one source by a single manufacturer and secondary materials are obtained from sources recommended by primary materials manufacturers.

1.9.3.1 Use single brand of paint chosen throughout work of this Section, except where specified otherwise.



## 1.10 DELIVERY, STORAGE, AND HANDLING

- 1.10.1 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- 1.10.1.1 Imprint containers with labels indicating the following:
- .1 Type of paint or coating.
  - .2 Compliance with applicable standard.
  - .3 Colour number in accordance with established colour schedule.
- 1.10.2 Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 7 deg C (45 deg F).
- 1.10.2.1 Maintain containers in clean condition, free of foreign materials and residue.
- 1.10.2.2 Remove rags and waste from storage areas daily.
- 1.10.2.3 Keep materials away from excessive heat or direct rays of the sun.
- 1.10.2.4 Remove used cloths from building at the end of every working shift and when not in use.
- 1.10.3 Fire Prevention:
- 1.10.3.1 Prevent fire or explosion caused by improper storage of paints, solvents, rags, and similar items. Store hazardous materials in location and in manner approved by local fire authority.
- 1.10.3.2 Post "No Smoking" signs in areas of storage and mixing. Provide and maintain CO<sub>2</sub> fire extinguishers of minimum 9 kg (20 lb) capacity.

## 1.11 FIELD CONDITIONS

- 1.11.1 Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 18 and 35 deg C (65 and 95 deg F). When required, Provide heating facilities to maintain ambient air and substrate temperatures above 10 deg C for 24 hours before, during and after paint application until paint has cured sufficiently.
- 1.11.2 Provide ventilation to remove odours, evaporating solvents and moisture. Maintain adequate ventilation at all times to control excessive humidity. Provide continuous ventilation for 7 days after completion of application of paint.
- 1.11.3 Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 3 deg C (5 deg F) above the dew point and rising; or to damp or wet surfaces.
- 1.11.4 Paint and finish work items in clean, dust-free, properly ventilated and adequately lit areas (minimum 100 lx (9.3 ft candles).
- 1.11.5 Apply paint in occupied facilities during silent (off-) hours only. Schedule operations to approval of Owner such that painted surfaces will have dried and cured sufficiently before occupants are affected.

## 1.12 WARRANTY

- 1.12.1 Warrant Work of this Section for period of 2 years against defects and deficiencies in accordance with General Conditions of the Contract.
- 1.12.2 Promptly correct defects or deficiencies which become apparent within warranty period, to satisfaction of Consultant and at no expense to Owner.
- 1.12.3 Defects include but are not limited to: material shrinkage, cracking, splitting, bubbling, blistering and delamination resulting from defective materials or poor workmanship.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- 2.1.1 Products from the following manufacturers may be acceptable for inclusion into The Work, provided they meet requirements of Contract Documents.
  - 2.1.1.1 Benjamin Moore & Co. (Canada).
  - 2.1.1.2 Cloverdale Paint.
  - 2.1.1.3 Coronado Paint/Corotech/Insl-x .
  - 2.1.1.4 Dulux Paints (Canada).
  - 2.1.1.5 PPG Architectural Finishes, Inc.
  - 2.1.1.6 Sherwin-Williams Company (The).

### 2.2 PERFORMANCE REQUIREMENTS

- 2.2.1 MPI Standards: Unless indicated otherwise, Provide products that comply with MPI standards indicated and that are listed in its "MPI Approved Products List." Functionally and aesthetically equivalent Products that do not meet requirements of MPI standards may be considered, provided they meet requirements of this Specification and are reviewed by the Consultant.
- 2.2.2 Unless otherwise specified herein, all painting work shall be in accordance with MPI Premium Grade finish requirements
- 2.2.3 Material Compatibility:
  - 2.2.3.1 Provide materials for use within each paint system that are compatible with one another and substrates indicated on Drawings and Schedules, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
  - 2.2.3.2 For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated on Drawings and Schedules.
- 2.2.4 Minimum Coat Thickness: Unless indicated otherwise, Minimum coat thicknesses for the work of this Section are as follows:
  - 2.2.4.1 Latex and Acrylics (Interior): 0.03 mm (1.2 mils) DFT/coat.
- 2.2.5 Standard of Acceptance:
  - 2.2.5.1 Walls: no defects visible from a distance of 900 mm (3 ft) at 90 deg to surface when viewed using final lighting source.

- 2.2.5.2 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.
- 2.2.6 Except as noted herein or indicated on Room Finish Schedule, paint interior walls and ceiling surfaces accordance with the following criteria over appropriate prime / sealer coat:
  - 2.2.6.1 All areas (except as noted): standard performance low odour/low VOC interior, institutional latex.
  - 2.2.6.2 High-traffic areas including school hallways and bathrooms: “scuff-resistant” low odour/low VOC interior, institutional latex
  - 2.2.6.3 Commercial wet areas including, kitchenettes, janitor rooms,: High performance epoxy modified latex or water-based epoxy.

## 2.3 FINISHES

- 2.3.1 Material Tag: This item is noted as “PT#” on Drawings and Schedules.
- 2.3.2 Unless indicated otherwise, gloss values for the work of this Section are as follows:
  - 2.3.2.1 Walls: Semi-Gloss
  - 2.3.2.2 Trim and Doors: Semi-gloss.
  - 2.3.2.3 Ceilings: Eggshell
- 2.3.3 Colours: Refer to Finish Schedule on Drawings.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- 3.1.1 Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- 3.1.2 Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
  - 3.1.2.1 Masonry (Clay and CMU): 12 percent.
  - 3.1.2.2 Wood: 15 percent.
  - 3.1.2.3 Gypsum Board: 12 percent.
- 3.1.3 Gypsum Board Substrates: Verify that finishing compound is sanded smooth. Inspect surfaces to ensure there is no “nail popping”, screw recessed are recessed, and surface is free of breaks and imperfections.
- 3.1.4 Wood Substrates: Inspect work to ensure surfaces are smooth, free from machine marks and that nailheads have been countersunk.
- 3.1.5 Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- 3.1.6 Proceed with coating application only after unsatisfactory conditions have been corrected.
  - 3.1.6.1 Application of coating indicates acceptance of surfaces and conditions.

### 3.2 PREPARATION

- 3.2.1 Comply with manufacturer's written instructions and recommendations in "MPI Manual" applicable to substrates indicated on Drawings and Schedules.
- 3.2.2 Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
  - 3.2.2.1 After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
- 3.2.3 Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
  - 3.2.3.1 Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated on Drawings and Schedules.
- 3.2.4 Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceed that permitted in manufacturer's written instructions.
- 3.2.5 Aluminum Substrates: Remove loose surface oxidation.
- 3.2.6 Wood Substrates:
  - 3.2.6.1 Scrape and clean knots, and apply coat of knot sealer before applying primer.
  - 3.2.6.2 Sand surfaces that will be exposed to view, and dust off.
  - 3.2.6.3 Prime edges, ends, faces, undersides, and backsides of wood.
  - 3.2.6.4 After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.
- 3.2.7 Plastic (PVC or similar): Solvent clean to SSPC-SP1. Sand lightly with No. 120 sandpaper and remove dust.

### 3.3 MIXING

- 3.3.1 Mix and prepare paint materials in accordance with manufacturer's directions for particular material and coat to be applied. If reducing is required, do so in accordance with recommendations of manufacturer for particular material and coat.
- 3.3.2 Tint undercoats and each finish coat with correct type colours, for identification of each succeeding coat.
- 3.3.3 Clean containers used for storage, mixing and application of materials free of foreign materials and residue.

### 3.4 APPLICATION

- 3.4.1 Apply paints according to manufacturer's written instructions and to recommendations in "MPI Manual."
  - 3.4.1.1 Use applicators and techniques suited for paint and substrate indicated on Drawings and Schedules.

- 3.4.1.2 Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
- 3.4.1.3 Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
- 3.4.1.4 Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
- 3.4.1.5 Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
- 3.4.2 Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match colour of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.
- 3.4.3 If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, colour, and appearance.
- 3.4.4 Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and colour breaks.

### 3.5 EQUIPMENT

- 3.5.1 Read Divisions 21, 22, 23 and Division 26 for their requirements and further instruction on painting Mechanical and Electrical work and perform such work under supervision of respective Mechanical and Electrical Divisions.
- 3.5.2 Paint finished area exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment with colour and finish to match adjacent surfaces, except as indicated.
- 3.5.3 Do not paint over nameplates.
- 3.5.4 Keep sprinkler heads free of paint.
- 3.5.5 Paint inside of ductwork where visible behind grilles, registers and diffusers with primer and one coat of matt black paint.
- 3.5.6 Paint both sides and edges of backboards for telephone and electrical equipment before installation. Leave equipment in original finish except for touch-up as required, and paint conduits, mounting accessories and other unfinished items.
- 3.5.7 Do not paint interior transformers and substation equipment.
- 3.5.8 Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:
  - 3.5.8.1 Paint the following work where exposed in occupied spaces:
    - .1 Equipment, including panelboards.
    - .2 Uninsulated metal piping.
    - .3 Uninsulated plastic piping.
    - .4 Pipe hangers and supports.
    - .5 Metal conduit.

- .6 Plastic conduit.
  - .7 Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
  - .8 Other items as directed by Consultant.
- 3.5.8.2 **Co**Other unfinished areas: leave exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment in original finish and touch up scratches and marks.

### 3.6 EXISTING SPACES

- 3.6.1 Refinish existing surfaces of rooms or areas which have been damaged, altered or otherwise affected by work. Finish "new" work occurring in these spaces unless otherwise specified. Use same procedure as for new work but primer (or filler, stain and sealer in case of varnish finish) may be omitted. Prepare existing surfaces as specified herein. Ensure finish matches previous finish.
- 3.6.2 Paint or repaint rooms or areas where noted on Room Finish Schedule and/or as indicated on Drawings.
- 3.6.3 Repaint surfaces entirely between changes of plane. Extend painting to a suitable boundary to avoid a "patched" effect. Sand, wire-brush, or scrape such existing finished surfaces to remove loose paint and to reduce gloss. Also clean existing films of dirt, grease or wax. If metallic surfaces are rusted, remove loose scale to provide a firm surface. Patch and sand cracks and other imperfections.
- 3.6.4 Provide paint to interior existing spaces affected by alterations in accordance with following:
  - 3.6.4.1 Paint walls to nearest inside and outside corners for full wall height.
  - 3.6.4.2 Paint columns floor to ceiling.
  - 3.6.4.3 Paint full ceilings to nearest wall or bulkhead.
  - 3.6.4.4 Unless indicated otherwise match existing colour.
  - 3.6.4.5 Where Room Finish Schedule indicates existing and/or new wall finishes to be painted, existing surfaces such as, existing door and frames, mechanical supply and return air grilles (both on walls and ceilings), access doors and electrical panels which have been previously painted are to be painted to provide a complete and finished room.
  - 3.6.4.6 Where Room Finish Schedule indicates "-" it denotes entire room need not be painted, paint only patched area.]

### 3.7 CORE AND SHELL SPACES

- 3.7.1 Provide paint systems as specified in this Section to interior exposed elements in "finished" areas as noted on Room Finish Schedule. In unfinished areas, Provide minimum one coat of primer whether or not this is indicated on Room Finish Schedule.

### 3.8 FIELD QUALITY CONTROL

- 3.8.1 Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.

- 3.8.1.1 Contractor shall touch up and restore painted surfaces damaged by testing.
- 3.8.1.2 If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

### 3.9 CLEANING AND PROTECTION

- 3.9.1 At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- 3.9.2 After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- 3.9.3 Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Consultant, and leave in an undamaged condition.
- 3.9.4 At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.
- 3.9.5 Protect finished areas subject to contact during drying by posting "Wet Paint" signs and barring from traffic where necessary.
- 3.9.6 Leave storage areas clean and free from evidence of occupancy.
- 3.9.7 Collect waste paint by type and provide for delivery to recycling or collection facility. Recycle empty paint cans.
- 3.9.8 Make Good any damage to building surfaces or furnishings resulting from painting operations at no cost to Owner.

### 3.10 PAINT FINISHING SCHEDULE

- 3.10.1 "Scuff-Resistant" Low Odour/Low VOC Interior, Institutional Latex
  - 3.10.1.1 Concrete Substrates, Nontraffic Surfaces
    - .1 Prime Coat: one coat alkali-resistant primer (MPI #3)
      - .1 "Loxon Concrete & Masonry Primer, <100 g/L" by Sherwin Williams
      - .2 "Ultra Spec® Masonry Interior / Exterior 100% Acrylic Masonry Sealer" by Benjamin Moore
      - .3 "Primemaster Primer/Sealer," by Master Coating Technologies
    - .2 Topcoats: two coats, latex, interior, institutional low odor/VOC "scuff-resistant" acrylic.
      - .1 "ProMar 200 HP Zero VOC, 0 g/L" by Sherwin Williams
      - .2 "Ultra Spec® SCUFF-X™ Finish" by Benjamin Moore
      - .3 "Scuffmaster ScrubTough," by Master Coating Technologies.
  - 3.10.1.2 CMU Substrates:
    - .1 Block Filler: one coat Block filler, latex, interior/exterior, (MPI #4)

- .1 "PrepRite Block Filler, 45 g/L" by Sherwin Williams
  - .2 "Ultra Spec Masonry Block Filler K571" by Benjamin Moore
  - .2 Topcoats: two coats, latex, interior, institutional low odor/VOC "scuff-resistant" acrylic.
    - .1 "ProMar 200 HP Zero VOC, 0 g/L" by Sherwin Williams
    - .2 "Ultra Spec® SCUFF-X™ Finish" by Benjamin Moore
    - .3 "Scuffmaster ScrubTough," by Master Coating Technologies.
- 3.10.1.3 Gypsum Board Substrates (ensure Level 5 finish is provided):
- .1 Prime Coat: One coat Primer sealer, interior, institutional low odor/VOC (MPI #149).
    - .1 "ProMar 200 Zero VOC Interior Latex Primer, 0 g/L" by Sherwin Williams
    - .2 "K534 Ultra Spec 500 Waterborne Interior Primer Sealer" by Benjamin Moore
    - .3 "Primemaster Primer/Sealer," by Master Coating Technologies
  - .2 Topcoats: two coats, latex, interior, institutional low odor/VOC "scuff-resistant" acrylic.
    - .1 "ProMar 200 HP Zero VOC, 0 g/L" by Sherwin Williams
    - .2 "Ultra Spec® SCUFF-X™ Finish" by Benjamin Moore
    - .3 "Scuffmaster ScrubTough," by Master Coating Technologies.

END OF SECTION



## **PART 1 GENERAL**

### **1.1 SUMMARY**

- 1.1.1 This Section includes toilet compartments as follows:
  - 1.1.1.1 Type: Plastic laminate.
  - 1.1.1.2 Compartment Style: Floor anchored.
- 1.1.2 Related Requirements: Specifications throughout all Divisions of the Project shall be read as a whole, and may be directly applicable to this Section.

### **1.2 REFERENCES**

- 1.2.1 Reference Standards: Unless otherwise indicated in this Section or the Building Code, the latest published editions of reference standards as of the Project's Bid Closing deadline apply.

### **1.3 SUBMITTALS**

- 1.3.1 Product Data: Include the following as applicable to the Work of this Section: manufacturer's instructions, product literature, and technical data sheets; include performance standards, dimensions, finishes, and limitations. Submit Product Data for each product indicated.
- 1.3.2 Shop Drawings: Include plans, elevations, sections, details of installation, and attachments to other Work.
- 1.3.3 Samples: For each exposed finish and for each colour and pattern required.

## **PART 2 PRODUCTS**

### **2.1 MANUFACTURERS**

- 2.1.1 Provided requirements of Contract Documents are satisfied, provide Products by of the following manufacturers for work this Section:
  - 2.1.1.1 Accurate Partitions Corporation.
  - 2.1.1.2 Bobrick Washroom Equipment, Inc.
  - 2.1.1.3 Capitol Partitions, Inc.
  - 2.1.1.4 Commercial and Architectural Products, Inc.; Marlite.
  - 2.1.1.5 Compression Polymers Group; Comtec Industries.
  - 2.1.1.6 Crane Plumbing; Sanymetal.
  - 2.1.1.7 General Partitions Mfg. Corp.
  - 2.1.1.8 Global Steel Products Corp.
  - 2.1.1.9 Metpar Corp.
  - 2.1.1.10 Santana Products, Inc.

### **2.2 MATERIALS**

- 2.2.1 Panel and Pilaster Material:

2.2.1.1 Plastic Laminate: NEMA LD 3, Grade HGS.

.1 Colour: As selected by Consultant from manufacturer's full range.

2.2.2 Core Material for Plastic Laminate: ANSI A208.1, Type M-2 particleboard with 45-lb density in thicknesses required to provide nominal thicknesses of 13mm (1/2 inch) minimum for panels, and 19 mm(3/4 inch) minimum for pilasters.

2.2.3 Pilaster Shoes and Sleeves (Caps): Solid plastic, polymer resin, not less than 76mm (3 inches) high.

2.2.4 Stirrup Brackets: Manufacturer's standard.

2.2.5 Continuous Brackets: Manufacturer's standard.

## 2.3 FABRICATION

2.3.1 Toilet Compartments: Floor anchored.

## PART 3 EXECUTION

### 3.1 INSTALLATION

3.1.1 Install units rigid, straight, level, and plumb, with not more than 12mm (1/2 inch) between pilasters and panels and not more than 24mm (1 inch) between panels and walls. Provide brackets, pilaster shoes, bracing, and other components required for a complete installation. Use theft-resistant exposed fasteners finished to match hardware. Use sex-type bolts for through-bolt applications.

3.1.1.1 Brackets: Align brackets at pilasters with brackets at walls.

END OF SECTION

## **PART 1 GENERAL**

### **1.1 GENERAL INSTRUCTIONS**

- 1.1.1 Read and conform to: The general provisions of the Contract, including General and Supplementary Conditions; and the requirements of Division 01 Specifications and any additional documents referred to in this Section.
- 1.1.2 Contractor is solely responsible for dividing the Work among Subcontractors and Suppliers. Consultant and Owner assume no responsibility to act as arbiters or to establish subcontract limits between Sections or Divisions of the Work. Any references to related work items contained in this Section are provided for convenience only

### **1.2 SUMMARY**

- 1.2.1 Provide labour, materials, Products, equipment and services to complete the appliances and equipment work specified herein. This includes, but is not necessarily limited, to:
  - 1.2.1.1 Appliances, fixture equipment indicated on Drawings A302 and A303..
  - 1.2.1.2 Auxiliary materials required for a complete installation.
- 1.2.2 Related Requirements: Specifications throughout all Divisions of the Project shall be read as a whole, and may be directly applicable to this Section. Related requirements provided below are for convenience purposes only:
  - 1.2.2.1 Section 06 40 00, Architectural Woodwork.
  - 1.2.2.2 Division 22, Plumbing.
  - 1.2.2.3 Division 26, Electrical.

### **1.3 REFERENCES**

- 1.3.1 Reference Standards: Unless otherwise indicated in this Section or the Building Code, the latest published editions of reference standards as of the Project's Bid Closing deadline apply. Refer to 01 42 19 - Reference Standards.

### **1.4 PREINSTALLATION MEETINGS**

- 1.4.1 Project Meetings, generally: in accordance with Section 01 31 00, Project management and Coordination
- 1.4.2 Pre-installation Meetings: Schedule and hold a pre-installation meeting at the Project site at least one week before beginning work on this Section to coordinate activities with related Subcontractors.
  - 1.4.2.1 Required Attendance: Subcontractor performing work of this Section, representatives from manufacturers and fabricators involved in or affected by installation.
  - 1.4.2.2 Notification: Notify Consultant and Owner of scheduled meeting dates in advance; minimum 72 hour notice required.
  - 1.4.2.3 Agenda:

- .1 Discuss issues including, but not limited to, power, water and utility requirements.
  - .2 Coordination with built-in dimensions along with shipping and delivery schedules.
  - .3 Review progress of related construction activities and preparations for particular activity under consideration.
  - .4 Make note of required sequencing and coordination with materials and activities that have preceded or will follow.
- 1.4.2.4 Reporting: Record significant discussions, agreements, and disagreements, including required corrective measures and actions.
- 1.4.2.5 Distribution: Distribute minutes of the meeting to each party present and to other parties requiring information not more than 72 hours after meeting.

## 1.5 SUBMITTALS

- 1.5.1 Submittals, generally: in accordance with Section 01 33 00, Submittal Procedures.
- 1.5.2 Product Data: Submit manufacturer's product characteristics, catalogue cuts, installation instructions and other relevant information for each material and product used for appliances and equipment work specified in this Section.
- 1.5.2.1 Include manufacturer's installation instructions.
- 1.5.3 Schedule: Submit appliance schedule using same designations indicated on Drawings for all appliances used on project. Include manufacturer's name and product number, and location within Project.

## 1.6 CLOSEOUT SUBMITTALS

- 1.6.1 Closeout Submittals, generally: in accordance with Section 01 78 00, Closeout Submittals.
- 1.6.2 Operating and Maintenance Data: Submit care and maintenance instructions for appliances and equipment to be included in building operation and maintenance manual.
- 1.6.3 Warranty Documentation: Submit copy of extended warranties specified in this Section.

## 1.7 QUALITY ASSURANCE

- 1.7.1 Installer Qualifications: Engage an entity with at least five years' experience installing, erecting, or assembling work similar in material, design, and extent to that shown on Drawings and Schedules, and whose work has resulted in construction with a track record of successful in-service performance.

## 1.8 DELIVERY, STORAGE AND HANDLING

- 1.8.1 Product Requirements, generally: in accordance with Section 01 61 00, Common Product Requirements.

- 1.8.2 Deliver, store and handle appliances and equipment materials in accordance with manufacturer's written instructions.
- 1.8.3 deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- 1.8.4 Store materials in off-ground, in clean, dry, well-ventilated area.
- 1.8.5 Replace defective or damaged materials with new.

## 1.9 FIELD CONDITIONS

- 1.9.1 Environmental Restrictions: Do not deliver or install appliances and equipment until building is enclosed, wet work is complete, and HVAC system is operational and will maintain temperature and relative humidity levels equal to occupancy levels for remainder of construction period.
- 1.9.2 Field Measurements: Verify actual dimensions of construction contiguous with appliances and equipment by field measurements before fabrication.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- 2.1.1 Substitution Limitations: In accordance with requirements of Section 01 25 00, Substitution Procedures.

### 2.2 PERFORMANCE / DESIGN CRITERIA

- 2.2.1 Provide appliances with labels complying with CSA, cUL, CGA, and other standards required by authorities having jurisdiction.
- 2.2.2 Electrical Appliances: Must be listed and labelled to CSA C22.1 by a qualified testing agency.
- 2.2.3 Gas-Fueled Appliances: Must have CSA Blue Star mark.
- 2.2.4 Product Options: Where product is at Contractor's option, prefer appliances that qualify for the ENERGY STAR program.

### 2.3 EQUIPMENT, FIXTURES AND APPLIANCES

- 2.3.1 Refer to Drawings for list of appliances. Provide quantities, physical dimensions, colors, and electrical characteristics indicated.
- 2.3.2 For Owner-supplied appliances, refer to Division 01 for Owner's and Contractor's responsibilities.
- 2.3.3 No substitutions are permitted to equipment, fixtures and appliances.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- 3.1.1 Verify actual site conditions and location of adjacent materials prior to commencing work. Notify Consultant in writing of any conditions which would be

detrimental to the installation. Commencement of work implies acceptance of previously completed work.

### **3.2 INSTALLATION**

- 3.2.1 Installation, generally: Install work of this Section in strict accordance with manufacturer's written installation instructions and reviewed Shop Drawings. Supplement manufacturer's installation instructions with additional installation requirements specified in this Section to produce specified work results.
- 3.2.2 Unwrap, level, and support appliances. Install items square, plumb, and free from defects.
- 3.2.3 Securely anchor units to supporting construction with concealed fasteners.
- 3.2.4 Place free-standing units after finishes are complete; provide adequate clearances for operation.
- 3.2.5 Anti-Tip Devices: Install for each appliance according to manufacturer's written instructions.

### **3.3 START-UP SERVICE**

- 3.3.1 Perform operation tests on all equipment to ensure components, controls, safety devices, and attachments function correctly and as specified before final acceptance.

### **3.4 PROTECTION**

- 3.4.1 Protect appliances and equipment from damage, soiling and contaminating substances resulting from construction activities or caused by work of other trades.
- 3.4.2 Where soiling or spills have occurred, remove spills and soiling from adjacent surfaces using cleaning procedures recommended in writing by affected material's manufacturer. Do not use materials or process that can damage finishes, surfaces, or construction.
- 3.4.3 Promptly replace appliances and equipment work damaged during construction that cannot be satisfactorily repaired.

### **3.5 CLEANING AND WASTE MANAGEMENT**

- 3.5.1 Cleaning: Maintain clean construction area at the end of each day. When activities of this Section are complete, remove materials, tools, equipment and rubbish.
- 3.5.2 Waste Management and Disposal: sort waste for reuse, recycling, or disposal, as specified. Remove recycling bins and containers from site and dispose of contents at the appropriate waste disposal facilities.

**END OF SECTION**

## **PART 1 GENERAL**

### **1.1 GENERAL INSTRUCTIONS**

- 1.1.1 Read and conform to: The general provisions of the Contract, including General and Supplementary Conditions; and the requirements of Division 01 Specifications and any additional documents referred to in this Section.

### **1.2 SUMMARY**

- 1.2.1 Provide labour, materials, products, equipment and services to complete the ENTRANCE FLOOR MATS AND FRAMES work specified herein. This includes, but is not necessarily limited, to:
- 1.2.1.1 Entrance floor mats and frames
  - 1.2.1.2 Roll-up rail mats.
- 1.2.2 Related Requirements: Specifications throughout all Divisions of the Project shall be read as a whole, and may be directly applicable to this Section.

### **1.3 REFERENCES**

- 1.3.1 Reference Standards: Unless otherwise indicated in this Section or the Building Code, the latest published editions of reference standards as of the Project's Bid Closing deadline apply.

### **1.4 COORDINATION**

- 1.4.1 Coordinate size and location of recesses in concrete to receive floor mats and frames.

### **1.5 ACTION SUBMITTALS**

- 1.5.1 Product Data: Submit product data in accordance with Division 01 for the following:
- 1.5.1.1 Submit manufacturer's instructions, printed product literature and data sheets for the ENTRANCE FLOOR MATS AND FRAMES work and include product characteristics, performance criteria, physical size, finish and limitations.
  - 1.5.1.2 Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for floor mats and frames.
- 1.5.2 Shop Drawings:
- 1.5.2.1 Items penetrating floor mats and frames, including door control devices.
  - 1.5.2.2 Divisions between mat sections.
  - 1.5.2.3 Perimeter floor moldings.
- 1.5.3 Samples: Submit samples in accordance with Division 01 for the following products, in manufacturer's standard sizes:
- 1.5.3.1 Floor Mat: Assembled sections of floor mat.

## 1.6 CLOSEOUT SUBMITTALS

1.6.1 Maintenance Data: Submit maintenance data in accordance with Division 01 for floor mats and frames to include in maintenance manuals.

## 1.7 MAINTENANCE MATERIAL SUBMITTALS

1.7.1 Supply extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1.7.1.1 Resilient-Tile Entrance Mats: Full-size tile units equal to 2 percent of amount installed, but no fewer than 10 units.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

2.1.1 Products from the following manufacturers may be acceptable for inclusion into The Work, provided they meet requirements of Contract Documents.

#### 2.1.1.1 Roll-Up Rail Mats

- .1 American Floor Products Company, Inc.
- .2 American Mat & Rubber Company.
- .3 Arden Architectural Specialties, Inc.
- .4 Balco, Inc.
- .5 Cactus Mat Mfg. Co.
- .6 Crowder, K. N. Manufacturing, Inc.
- .7 C/S Group.
- .8 Durable Corporation.
- .9 J. L. Industries, Inc.
- .10 Kadee Industries, Inc.
- .11 Mats Inc.
- .12 Musson Rubber Company.
- .13 Nystrom
- .14 Pawling Corporation; Architectural Products Division.
- .15 Reese Enterprises, Inc.

### 2.2 ENTRANCE FLOOR MATS AND FRAMES, GENERAL

2.2.1 Regulatory Requirements: Comply with applicable provisions in ICC A117.1.

### 2.3 ROLL-UP RAIL MATS

2.3.1 Roll-up, Aluminum-Rail Hinged Mats: Extruded-aluminum tread rails 38 mm (1-1/2 inches) wide by 19 mm (3/4 inch) thick, sitting on continuous vinyl cushions.

2.3.1.1 Tread Inserts: Ribbed-design-surface, resilient vinyl.

2.3.1.2 Colours, Textures, and Patterns of Inserts: As selected by Consultant from full range of industry colours.



- 2.3.1.3 Rail Colour: As selected by Consultant from full range of industry colours and colour densities.
- 2.3.1.4 Hinges: Plastic.
- 2.3.1.5 Mat Size: To match existing
- 2.3.1.6 Basis of Design: "Roll-Up GRATEdesign" by Nystrom, or approved alternative.

## 2.4 CONCRETE FILL AND GROUT MATERIALS

- 2.4.1 Provide concrete fill and grout equivalent in strength to cast-in-place concrete slabs for recessed mats and frames. Use aggregate no larger than one-third fill thickness.

## 2.5 FABRICATION

- 2.5.1 Floor Mats: Shop fabricate units to greatest extent possible in sizes indicated on Drawings and Schedules. Unless otherwise indicated on Drawings and Schedules, provide single unit for each mat installation; do not exceed manufacturer's recommended maximum sizes for units that are removed for maintenance and cleaning. Where joints in mats are necessary, space symmetrically and away from normal traffic lanes. Miter corner joints in framing elements with hairline joints or provide prefabricated corner units without joints.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- 3.1.1 Examine substrates and floor conditions for compliance with requirements for location, sizes, minimum recess depth, and other conditions affecting installation of floor mats and frames.
- 3.1.2 Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION

- 3.2.1 Install recessed mat frames to comply with manufacturer's written instructions. Set mat tops at height recommended by manufacturer for most effective cleaning action; coordinate tops of mat surfaces with bottoms of doors that swing across mats to provide clearance between door and mat.
  - 3.2.1.1 Install necessary shims, spacers, and anchorages for proper location, and secure attachment of frames.
  - 3.2.1.2 Install grout and fill around frames and, if required to set mat tops at proper elevations, in recesses under mats. Finish grout and fill smooth and level.

### 3.3 PROTECTION

- 3.3.1 After completing frame installation and concrete work, provide temporary filler of plywood or fiberboard in recesses and cover frames with plywood protective

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**ENTRANCE FLOOR MATS AND FRAMES**

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flooring. Maintain protection until construction traffic has ended and Project is near Substantial Performance of the Work.

END OF SECTION