

Request for Tender

Document Number: 2024-354T

**Document Title: GENERAL CONTRACTING SERVICES FOR RENOVATIONS AT 180 DERRY ROAD,
MISSISSAUGA PEEL REGIONAL POLICE**

Date Issued: Friday, July 12, 2024

Non-Mandatory site visit date: Tuesday, July 16, 2024

**ELECTRONIC BID SUBMISSIONS ONLY shall be received by the Agency through the Bidding System
no later than:**

**12:00 noon local time
Friday, July 26, 2024**

It is the Bidder's sole responsibility to ensure that:

- a Bidder's representative attends the non-mandatory site visit where applicable
- the submission is received electronically by the Agency through the Bidding System by the date and time specified above
- the submission is accompanied by all required documentation including but not limited to a digital bid bond in the amount of \$300,000.00

**Procurement Representative: Travis Yon, Procurement Analyst
Telephone Number: 289-305-1831**

**The following General Contractors have been prequalified for this project in accordance
with prequalification Document 2023-620PQ:**

- BDA Inc.
- Gordon Busch Inc.
- M.J. Dixon Construction Limited
- RMG Contract Interiors Inc.
- Rutherford Contracting Ltd.
- Renokrew

For **GENERAL CONTRACTING SERVICES FOR RENOVATIONS AT 180 DERRY ROAD, MISSISSAUGA PEEL REGIONAL POLICE**, as required, and as specified within this Document.

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Instructions to Bidders

1. DEFINITIONS

- (a) “Agency” means The Regional Municipality of Peel, Peel Regional Police, Peel Housing Corporation and any other government or agency or board on behalf of which The Regional Municipality of Peel is acting and for the purposes of the performance of the Contract shall mean the municipality or entity awarding the Contract. For purposes of the Contract, “Agency” shall include “Owner” as defined in the Contract.
- (b) “Bidder” means any proponent, respondent or other person or entity who has obtained official procurement documents for the purpose of submitting, or who has submitted a Bidder Submission in response to the Document. Furthermore, the definition of “Bidder” shall include any entity affiliated or related to the Bidder (including any entity with the same directing mind as the Bidder) as determined in the discretion of the Director of Procurement, in consultation with the Regional Solicitor.
- (c) “Bidder Submission” means the document as completed by the Bidder for the purpose of offering to sell to the Agency the goods and/or services specified in the Document, and includes but is not limited to quotations, tenders and proposals.
- (d) “Bidding System” means the electronic system used by the Agency for its public tenders, bids and request for proposals at the following website: peelregion.bidsandtenders.ca, which is required to be used for all dissemination of information by or on behalf of the Agency and all submissions from Bidders for this Document.
- (e) “Document” means the document describing the goods and/or services to be purchased and the terms upon which the goods and/or services are to be purchased and includes, without limitation, those documents referenced on the index of the Document and such addenda as may be issued by the Agency from time to time.
- (f) “Operator” means the Owner’s operations and maintenance employees, and/or contract operator of the site where the Work is being performed.
- (g) “Procurement Representative” means the person named as the Procurement Representative or designate on the Document.
- (h) “Region of Peel” has the same meaning as the Agency.
- (i) “Vendor” means the successful Bidder and includes the term “Contractor” who enters into the Contract with the Agency for the provision of the goods and/or services set out in this Document.
- (j) “Consultant” means Comley Van Brussel Design Management Inc.

2. INFORMATION AND COMMUNICATIONS

- 2.1 Any questions or information required regarding this Document must be submitted through the Bidding System via peelregion.bidsandtenders.ca by clicking the ‘Submit a Question’ button for the selected bid opportunity at least four working days prior to closing. Do not submit your questions via e-mail. No oral communications will be considered binding.
- 2.2 Any Bidder who requests and/or receives any information, with regards to this Document, by any person(s) other than the Procurement

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Representative or designate, may be disqualified from further consideration.

- 2.3 It is recommended that vendors add noreply@bidsandtenders.ca to their “safe senders” lists in their e-mail systems and monitor their spam/ clutter/ junk filters to ensure they do not miss automatically generated messages sent by bidsandtenders.ca that relate to this bid opportunity.
3. **NON-MANDATORY SITE VISIT**
- 3.1 One (1) non-mandatory site visit is scheduled in order to ascertain the Work requirements outlined in the Bid Document. The site visit will be held as indicated in the Online Bidding System and below. Additional site visits will not be permitted.
- Non-Mandatory Site Visit – 180 Derry Road, East**
- Date and Time: Tuesday, July 16, 2024, at 10:00 AM
Location: 180 Derry Road East, Mississauga, ON, L5T 2Y5
Meeting Details: Front desk
- 3.2 **Registration**
Bidders who wish to attend the site meeting are encouraged to e-mail Procurement Lead, Travis Yon at travis.yon@peelregion.ca at least 24 hours prior to the scheduled site visit date and time indicated above and in the Online Bidding System. 2 representative(s) from each Bidder’s firm may attend the site visit and the attendee’s first and last name, telephone number, and e-mail address shall be indicated at the time of registration.
- 3.3 Bidders are reminded that this site visit is NON-MANDATORY. Attendance will be at the discretion of the Bidder, however, Bidders who choose not to attend will be deemed to have received all of the information made available to attendees. A Bidder’s failure to attend the non-mandatory site visit is at the Bidder’s sole risk and responsibility.
- 3.4 During the site visit, Bidders may ask questions and seek clarifications pertaining to the Bid Document. Notwithstanding that the Agency may give oral answers at a site visit, such answers shall not be considered final unless issued by way of an Addendum to the Bid Document. Therefore, Bidders are strongly encouraged to submit such questions in writing and in accordance with the instructions contained in the Bid Document.
- 3.5 No statement, consent, waiver, acceptance, approval or anything else said or done in any site visit by the Agency or any of its respective advisors, employees or representatives shall amend or waive any provision of the Bid Document, or be binding on the Agency or be relied

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upon in any way by Bidders, except when and only to the extent expressly confirmed in an Addendum to the Bid Document issued in accordance with the process identified in the Bid Document.

4. DATE AND PLACE FOR RECEIVING BIDDER SUBMISSIONS AND ACCEPTANCE PERIOD

- 4.1 ELECTRONIC BID SUBMISSIONS ONLY shall be received by the Agency through the Bidding System and must be received on or before 12:00 noon local time in Brampton, Ontario on Weekday, Friday, July 26, 2024
- 4.2 The closing date and time shall be determined by the Agency's Bidding System.
- 4.3 This procurement is being advertised in accordance with the applicable procurement obligations outlined in the Canada-European Union Comprehensive Economic and Trade Agreement (CETA), Canadian Free Trade Agreement (CFTA), and the Ontario-Quebec Trade and Cooperation Agreement (OQTCA).
- 4.4 Bidder Submissions submitted and/or received by any other method will be disqualified by the Agency unless instructed otherwise by published addenda in respect of the Document.
- 4.5 Only documents found on the Region of Peel's website at peelregion.bidsandtenders.ca are to be considered "official" documents. The Region of Peel accepts no responsibility for the accuracy or completeness of information found on other websites. The onus is on the Bidder to check the Region of Peel's website to verify they have received all relevant information. The Bidder risks submitting a non-compliant bid if addenda or other required information is missing, and disqualification could result.
- 4.6 It is the Bidder's sole responsibility to ensure their Bidder Submission is received by the time and date specified in the Agency's Bidding System. The receipt of Bidder Submissions can be delayed due to a number of factors including, but not limited to, "internet traffic", file transfer size, and transmission speed. The Bidder should allow sufficient time to upload its Bidder Submission, including any attachments. Late Bidder Submissions will not be accepted by the Agency's Bidding System.
- 4.7 A Bidder Submission will only be considered to be submitted once it has been RECEIVED by the Agency in its Bidding System, regardless of when the Bidder Submission was submitted by the Bidder.
- 4.8 Bidders will be sent a confirmation e-mail by the Agency's Bidding System to the e-mail address provided by the Bidder when it registered as a Plan

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Taker in the Bidding System for the Document advising that its Bidder Submission was submitted successfully. Bidders should not consider its Bidder Submission to have been submitted until it has received the confirmation e-mail.

- 4.9 The Bidder is solely responsible for the delivery of its Bidder Submission in the manner and by the closing date and time prescribed in the Agency's Bidding System. Each Bidder is responsible for the actual delivery of its Bidder Submission prior to the closing time and closing date.
- 4.10 The Agency is not responsible for any incomplete or misdirected Bidder Submissions due to electronic technical problems arising out of the Bidder's use of the Agency's Bidding System.
- 4.11 Bidder Submissions received by the Agency in accordance with the terms and conditions of the Document shall be irrevocable and open for acceptance for a period of 90 days following the date of the Bidder Submission closing.

5. ADDENDA

Addenda, if required, issued by the Procurement Representative and related to this Contract shall hereby form part of the Contract.

Any addenda related to this Contract will be posted through the Bidding System at peelregion.bidsandtenders.ca. Although the Bidding System will attempt to notify registered Bidders of when addenda are posted on the Bidding System, the Agency does not guarantee any receipt of notifications by Bidders and waives any responsibility. It is the sole responsibility of Bidders to check the Bidding System often to inform themselves of any posted addenda.

Bidders shall acknowledge receipt of any addenda when submitting their Bidder Submission through the Bidding System. Bidders shall check a box for each addendum and any applicable attachments that have been issued before a Bidder can submit their Bidder Submission online all in accordance with the terms and conditions of the Document and the Bidding System.

The Agency encourages Bidders not to submit their Bid Submission prior to forty-eight hours before the Document closing time and date, in the event that an addendum is issued. If a Bidder submits their Bidder Submission prior to this or at any time prior to the Document closing and an addendum is issued by the Agency, the Bidding System shall **WITHDRAW** their Bidder Submission and change their Bidder Submission to an **INCOMPLETE STATUS** (NOT accepted by the Agency) and the withdrawn Bidder Submission can be viewed by the Bidder in the "MY BIDS" section of the Bidding System. The Bidder is solely responsible to:

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- i) make any required adjustments to their Bidder Submission;
- ii) acknowledge the addendum/addenda; and
- iii) ensure the re-submitted Bidder Submission is RECEIVED by the Agency through the Bidding System no later than 12:00 noon local time on the Document closing date.

NOTES TO BIDDERS: Additional company contacts are recommended for the reasons outlined below:

- Do not invite any additional contacts that you do not want to have access to view, edit, submit and/or withdraw or who may be in direct competition, for example a company may have two divisions that could compete for the same bid opportunity.
- You are strongly urged, when creating or updating a Bidding System Bidder account, to add additional company contacts to create their own login to the Bidding System. This will permit your invited contacts that have created their own login to manage (register, submit, edit and withdraw) Bids which your company is a Registered Plan Taker for. In the event you are on vacation, or due to illness, etc., these additional contacts may act on your company's behalf and have the authority to receive addendum notifications from the Bidding System and where permitted by the terms and conditions of the Document, to submit Bidder Submissions electronically through the Bidding System and/or withdraw and/or edit and/or acknowledge addendum/addenda, on your behalf.
- If you are an invited company contact, it is imperative that you create your login from the link contained in the e-mail invitation. Do NOT go directly to peelregion.bidsandtenders.ca website and create a separate Bidder account.

6. CONTRACT AWARD

The Agency reserves the right to award the Contract in its entirety or in part to one or more Vendors in accordance with its requirements. Prior to award, the Agency reserves the right to perform a site visit at the Bidder's facilities for the purpose of evaluating the Bidder Submission.

Without limiting, and in addition to all other rights to which the Agency is entitled pursuant to this Document, the Agency shall be entitled to fully evaluate the Bidder Submission, which evaluation may include, without limitation, a review of references provided by the Bidder and of those that may be obtained by the Agency independently, past performance history of contracts between the Bidder and the Agency and/or between the Bidder and third parties, past completion history (including completion of full contract term, late or extended completion of contract and late delivery of goods or services), litigation and claims history of the Bidder (including previous, existing or potential litigation with the Agency or others and construction liens filed by the Bidder or subcontractors), delivery of incorrect services, customer service and responsiveness, or history of bidding unrealistic pricing, any of which may result in higher ultimate costs or other

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- difficulties for the Agency, and to reject a Bidder Submission if the same is, in the Agency's sole opinion, unsatisfactory, or would not provide the best value to the Agency.
7. **QUANTITIES**
Quantities in the Document are approximate only and are based on information available to the Agency at the time of tendering. Final quantities for payment of tender items supplied on a unit price basis shall be based on actual field measurements as determined by the Agency.
8. **BID PRICING CHANGES**
The legislation and regulations governing the workplace in Ontario, including, without limitation, the Canadian *Income Tax Act*, the Canadian *Immigration and Refugee Protection Act*, Ontario *Employment Standards Act, 2000*, *Employer Health Tax Act*, *Labour Relations Act, 1995*, *Occupational Health and Safety Act* and *Workplace Safety and Insurance Act, 1997* may change at any time and may impact upon Bidders' pricing and overhead costs. In submitting its Submission, each Bidder hereby acknowledges that it has considered any proposed changes to legislation and regulations, and any impact such changes, if any, may have on its pricing. Bidders are advised that the Agency will not entertain requests to change submitted bid prices for this Document based on changes to the minimum wage or other legislative or regulatory amendments made under any statute. It is each Bidder's obligation to operate according to all applicable law at all times. For clarity, each Bidder takes on all risk and responsibility for cost increases due to legislative and regulatory changes. For further clarity, each Bidder takes on all risks due to health, environmental, social, emergency or other factors which may arise and which may result in unforeseen or otherwise uncalculated costs or legal circumstances to the Bidder in order to complete the Work, to keep its workers or the public safe according to applicable law and government order, or to address other intervening circumstances. The Bidder is required to arrange its own contractual and subcontractor obligations for labour, materials or other matters related to this contract so as to minimize or eliminate extra costs or circumstances which may jeopardize its ability to fulfill its contractual obligations to the Agency under this Document or Contract award.
9. **TIME OF COMPLETION**
The Contractor shall diligently complete the Work in accordance with the time of completion set out in 9.1 below. **The Substantial Performance Date shall not extend beyond the time provided below after the written order for commencement of the Works by the Owner.**
- If this time limit is not sufficient to permit completion of the Work by the Contractor within the Working Hours, the Contractor shall add and/or augment the Working Hours throughout the life of the Contract to the extent necessary to ensure that the Work will be completed within the time limit specified. Any additional costs occasioned by compliance with these provisions will be

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considered to be included in the prices bid for the various items of Work and no additional compensation will be allowed.

Any extension of working hours beyond those specified in this Contract will require written authorization of the Owner.

- 9.1 The Contractor agrees to have the Works “Substantially Performed” in accordance with this Document **within 16 weeks** after written order for commencement of the Work by the Owner.

The Contractor agrees that they will deliver the whole of the Works completed in accordance with this Document **within 19 weeks** after the date of Substantial Performance Date.

10. DIGITAL BID BOND

To be considered, the Bidder’s Submission must include a digitally created and electronically delivered bid bond in the form of bond included in Appendix 5.5 herein, naming the Agency as Obligee, in the amount of \$300,000.

The bond must be issued by a surety company licensed to issue surety bonds in the Province of Ontario.

The bond must be delivered by means of a service or application recognized as meeting in whole or in part the Surety Association of Canada’s mandatory requirements for e-bonding solutions. Photocopies, images or scanned facsimiles will not be accepted.

It is to be noted that the digital bid bonds of all Bidders will not necessarily be verified by the Agency. Prior to award of the Contract, the Agency will verify the digital bid bond of the Bidder who is proposed to be awarded the Contract by the Agency. Where the digital bid bond is not verifiable, the bid will be deemed non-compliant and disqualified. In such a case, the Agency will proceed to verify the digital bid bond of the next Bidder proposed to be awarded the Contract, and continue the process as necessary, until a digital bond is verified by a fully compliant Bidder whose bid is proposed to be awarded the Contract by the Agency.

If a digital bid bond and an Agreement to Bond are requested by the Agency and the surety company only provides the Bidder with a merged version, the Bidder is required to upload the merged document in both applicable fields of the online Bidding System forms.

The digital bid bond of the Bidder whose submission is accepted shall be called upon should the Bidder fail to execute a Contract and provide the necessary documents as required within this Document (such as a satisfactory bond, insurance certificate, Workplace Safety and Insurance Board letter of clearance)

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within seven days after receiving written notice from the Agency of the award of the Contract to the Bidder.

11. **ELECTRONIC AGREEMENT TO BOND**

In order to be considered for award, the Bidder shall submit through the Bidding System as part of their Bidder Submission, an Agreement to Bond in the form attached in Appendix 5.1, completed by a Bonding Company permitted to issue performance bonds and labour and material payment bonds in Ontario and with an A.M. Best rating of B+ or better. Any others will not be accepted. Each Bidder must submit the completed Agreement to Bond as part of their Bidder Submission in order to validate their Bidder Submission.

If a digital bid bond and an Agreement to Bond are requested by the Agency and the surety company only provides the Bidder with a merged version, the Bidder is required to upload the merged document in both applicable fields of the online Bidding System forms.

Upon receipt of written notice from the Agency that it has been awarded the Contract, the successful Bidder shall provide, within seven days of such notice, a digitally created and electronically delivered Performance Bond and a Labour and Material Payment Bond, each for the amount of **50 per cent** of the total lump sum price, substantially in the forms required under the *Construction Act*, to guarantee the performance of all obligations of the Contract.

The Performance Bond and a Labour and Material Payment Bond must be submitted by the successful Bidder in a digital format that meets the following Surety Association of Canada (SAC) criteria:

- 11.1 The version of the bond submitted by the successful Bidder must be verifiable by the Agency with respect to the totality and wholeness of the bond form including: the content, all digital signatures, and all digital seals with the Surety Company, or an approved verification service provider of the Surety Company.
- 11.2 The version of the bond submitted by the successful Bidder must be viewable, printable and storable in pdf format or other standard electronic file format acceptable to the Agency, and in a single file.
- 11.3 Photocopies, images or scanned facsimiles of bonds will not be accepted.
- 11.4 The verification of the successful Bidder's submitted bonds may be conducted by the Agency immediately or at any time during the life of the bond and at the discretion of the Agency, with no requirement for passwords or fees.
- 11.5 The results of the bond verification must provide a clear, immediate and printable indication of pass or fail regarding item 11.1
- 11.6 Bonds failing the verification process will NOT be considered to be valid and will NOT be accepted by the Agency as satisfying the requirements of the Contract.

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Following award, the Vendor shall be required to execute an agreement with the Agency on the terms of the CCDC2 Stipulated Price Contract 2008, as amended by the Agency's Supplementary Conditions as contained herein.

12. **INSURANCE**

The insurance shall be maintained continuously from the commencement of the work until the end of warranty period established within these contract documents following the date of the completion Certificate.

The Agency's Certificate of Insurance shall be completely filled in with the required information. No other form shall be accepted.

A deductible clause is only acceptable if the Contractor submits a signed and sealed letter stating the following:

"We (insert Contractor's name) authorize the Region of Peel to appoint an independent adjuster to settle any claims arising from this Contract which are for amounts less than our insurance deductible figure. Furthermore, the Region can deduct any amounts of justifiable claims from monies owing to the Contractor."

13. **VENDOR AS CONSTRUCTOR**

The Vendor acknowledges that, if the Agency does not enter into any other contracts for the project, the Vendor is the "constructor" and the "employer" within the meaning of the Occupational Health and Safety Act (Ontario) and the Vendor undertakes to carry out the duties, obligations and responsibilities of the constructor and the employer with respect to the project. In this project, the Agency may have cause to enter into more than one contract for the project. Additionally, there may be instances where the Agency's staff are required to attend the project site for specified intervals to perform work associated with the project. In such cases, the Vendor is required and agrees to fulfill all of the duties, obligations and responsibilities of the "constructor" and "employer" with respect to the project and on behalf of the owner, in accordance with the terms and conditions set out in SC 15 of the Supplementary General Conditions, and the Guidelines set out in GUIDELINES FOR THE CONTRACTOR WHERE OWNER'S STAFF AND OTHER CONTRACTORS ARE REQUIRED TO PERFORM WORK ON THE PROJECT SITE below.

14. **GUIDELINES FOR THE CONTRACTOR WHERE OWNER'S STAFF AND OTHER CONTRACTORS ARE REQUIRED TO PERFORM WORK ON THE PROJECT SITE**

Requirements for the contractor where other vendors/contractors or the Owner's staff/other contractors are required to attend the project site to perform work associated with the project are as follows.

The contractor shall:

- (a) Assume and fulfill the responsibility of constructor for all Owner's staff/other contractors attending the project site to conduct required Work.

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- (b) Provide orientation to Owner's staff/other contractors prior to Work commencement at the site.
- (c) Identify a site supervisor contact or assistant for all Owner's staff/other contractors.
- (d) Maintain a sign in/out log of all visitors to the site, including owner's staff/other contractors.
- (e) Maintain a signed copy of the Owner's Staff/Other Contractors Project Constructor Coordination Form for any Owner's staff/other contractors on site, in which all such persons working on the site shall provide a signed acknowledgement that they will comply with the contractor's safety program and safety instructions.
- (f) In order to avoid delays, provide sufficient notice and coordinate Owner's staff/other contractors' work so it does not impact or conflict with any other work happening at the site.
- (g) Schedule Owner's staff/other contractors' work as close as possible to substantial completion to avoid the majority of construction hazards and risk to Owner's staff/other contractors.
- (h) Maintain a log of all Form 1000 provided by each employer on site.

15. SUBCONTRACTORS

The Bidder shall provide in the Bidder Submission the name and address of each of its proposed subcontractors to be utilized in this project.

Attention is drawn to Section GC 3.7 of the General Conditions, Section SC19 of the Supplementary Conditions and to the instructions on the List of Suppliers and Subcontractors in the online Bidding System forms.

It is the responsibility of Bidders to ensure any subcontractors they retain are in good standing with the Agency under the Procedure and meet all requirements of this Document and are thus eligible to perform work on Agency contracts. Prior to bidding on this Document, Bidders shall contact the Agency at 905-791-7800 ext. 7538 to obtain a list of Contractors suspended from performing work on any Agency contracts as a subcontractor. Should a Bidder name any subcontractor in its Bidder Submission that is suspended as a subcontractor under the Procedure, the Bidder shall be required to name a replacement satisfactory to the Agency, acting reasonably, at no additional cost to the Agency, failing which the Bidder shall be deemed non-compliant and not given consideration for Contract award. By submitting a Bidder Submission, the Bidder accepts that the Agency has no liability to the Bidder or any subcontractor or third party related to the rejection of a subcontractor who is ineligible to be considered, or otherwise unsatisfactory to the Agency.

The Contractor shall arrange that each of the Contractor's Owner-approved Subcontractors whose subcontracts have a value of \$500,000 or greater, together with surety companies approved by the Owner, shall furnish to the Contractor a Performance Bond and a separate Labour and Material Payment Bond each in the amount of 50 per cent of the total value of the respective

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subcontract. The Performance Bond and the Labour and Material Payment Bond are to be substantially in the forms prescribed under the *Construction Act*, each adjusted only to reflect that it is to be obtained by the applicable Subcontractor instead of the Contractor. The Owner will not reimburse the Contractor separately for the cost of the bonds, therefore the Subcontractor should allow for the cost in the subcontractor's lump sum price.

The Owner will not require completed Agreement to Bond forms for the subcontractors' bonds mentioned above to be submitted by the Bidder at the time of tendering. The Bidder may decide, at the Bidder's discretion, to obtain Agreements to Bond from the Bidder's subcontractors at the time of tendering.

16. BIDDER SUBMISSION

- (a) The Bidder Submission must be submitted electronically using the Bidding System.
- (b) A person or persons with authority to bind the Bidder must electronically declare on the online Bidding System that their Bidder Submission has been made entirely in accordance with the Document.
- (c) All pricing in the Bidder Submission must be expressed in figures, and must be in Canadian Dollars.
- (d) Prices in the Bidder Submission must include all costs necessary to complete the Work in accordance with the Document including customs and duties.
- (e) The Bidder represents, warrants and confirms that no oral or written alterations or variations in the Document and/or Contract have been made by the Bidder and none shall be valid or binding upon the Agency unless authorized by the Agency in writing.
- (f) Bidder Submissions which are qualified or subject to any conditions, limitations or restrictions shall be rejected by the Agency.
- (g) The Bidder acknowledges that it is solely responsible for obtaining and reviewing all Contract documents and all addenda issued by the Agency pertaining to the Document.

Only Bidders that are registered as a Plan Taker for this Document with Bids and Tenders at peelregion.bidsandtenders.ca and have obtained this Document from Bids and Tenders or the Agency, may submit a Bidder Submission.

Should the Agency receive a Bidder Submission that is subsequently found to be from a Bidder that is not a registered Plan Taker with Bids and Tenders at peelregion.bidsandtenders.ca, and the Bidder did not obtain the Document from Bids and Tenders or the Agency, the Agency reserves the right to reject the Bidder Submission as non-compliant and give it no further consideration for contract award.

17. AGENCY RIGHTS

The Agency reserves the right, in its sole and absolute discretion to:

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- (a) deem a Bidder Submission to be unbalanced and may reject any and all Bidder Submissions, which it so deems, and for this purpose, “unbalanced” shall include, without limitation, a Bidder Submission which does not reflect a realistic breakdown of the costs of each or any portion of the Work;
- (b) adjust the totals in a Bidder Submission where there are errors in extensions, additions or computations. In such cases, the unit prices shown shall govern;
- (c) reject any or all Bidder Submissions, accept a Bidder Submission which is not the lowest price, reject a Bidder Submission even if it is the only one received by the Agency; and cancel or suspend or delay this request for Bidder Submissions at any time either before or after the receipt of Bidder Submissions, following which the Agency may proceed as it determines in its sole discretion, including without limitation, negotiating with any one or more of the Bidders or any other person or entity for the performance of the Work under such terms and conditions as the Agency may decide in its sole discretion, or issuing a new request for Bidder Submissions on the same or modified terms, all without liability to itself;
- (d) if making an award of the Contract in its entirety or in part, to one or more Vendors, make changes to the content of the Contract to address unforeseen circumstances which may have arisen during the bidding period, including but not limited to health, environmental, social or emergency events including but not limited to epidemics and pandemics, which require responses to ensure the health and safety of workers, the health of the public and of Agency staff, and the efficacy of the project are maintained at all times, if in doing so the best interests of the Agency will be served, and the Agency will assess the expected costs of such changes and make a contingency allowance for same, which the Vendor may claim costs against on a zero mark-up basis upon proof sufficient to the Agency, unless such changes are expected to be able to be accommodated by the Vendor without change to the Contract Price;
- (e) award the Contract in its entirety or in part, to one or more Vendors, if in doing so the best interests of the Agency will be served;
- (f) inspect and have a demonstration of the goods and/or services offered prior to award of a Contract and request evidence of experience, ability or financial standing;
- (g) waive formalities, technical defects, irregularities and omissions in a Bidder Submission, and may accept a Bidder Submission which does not comply with the formal requirements of the Document, if in doing so the best interests of the Agency will be served;
- (h) remove from the Agency’s list of vendors the name of any vendor and/or Bidder for failure to accept a contract or for unsatisfactory performance or non-performance of a contract;
- (i) fully evaluate the Bidder Submission, which evaluation may include, without limitation, a review of references provided by the Bidder and of those that may be obtained by the Agency independently, past performance history of contracts between the Bidder and the Agency

Instructions to Bidders

and/or between the Bidder and third parties, past completion history (including completion of full contract term, late or extended completion of contract and late delivery of goods or services), litigation and claims history of the Bidder (including previous, existing or potential litigation with the Agency or others and construction liens filed by the Bidder or subcontractors), delivery of incorrect services, customer service and responsiveness, or history of bidding unrealistic pricing, any of which may result in higher ultimate costs or other difficulties for the Agency, and to reject a Bidder Submission if the same is, in the Agency's sole opinion, unsatisfactory, or would not provide the best value to the Agency;

- (j) reject and disqualify any or all Bidder Submissions based on a Bidder's Vendor Performance Rating, status and standing as per the Agency's Vendor Performance Evaluations procedures, as amended from time to time;
- (k) seek further information and/or clarification, including without limitation a detailed price breakdown, from any Bidder after the closing time, for the purposes of assisting the Agency in interpreting and evaluating any Bidder Submission and in interpreting any inconsistencies which may appear in any Bidder Submission, and the Agency shall have the right to consider and rely on such further information and clarifications in evaluating the Bidder Submissions and awarding the Contract; and
- (l) either before, after or as a change to the terms of the Contract award, to temporarily suspend or to alter the timelines of the Contract delivery schedule or any other terms of the Contract in its sole discretion, in response to circumstances beyond the Agency's control or legislative changes or orders of a government, related to health (such as public health, occupational health and safety or construction safety), environmental, social or other emergent or unforeseen circumstances such as epidemics and pandemics.

18. **CONFIDENTIAL INFORMATION/OWNERSHIP AND DISCLOSURE OF BIDDER SUBMISSIONS**

- (a) The Vendor agrees to protect and maintain the confidentiality of all personal or other information, including all personal health information, that the Vendor accesses or of which the Vendor acquires knowledge of as a result of the services in this Contract, and agrees to use, collect, disclose, retain, protect and dispose of the personal (health) information only in accordance with all privacy legislation applicable to the Agency where it is acting on behalf of the Agency. Disclosure of any information shall be done only with the Agency's prior written consent. The provisions of the indemnity clause in this Contract apply to any breach of privacy or confidentiality in this clause. The Vendor shall ensure that its directors, officers, employees, agents, subcontractors and anyone else for whom it is responsible in law all adhere to the requirements of this section regarding privacy and confidentiality.
- (b) The Agency, and the Agency's responsibilities under this Contract, are subject to all applicable privacy legislation including the *Municipal*

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Freedom of Information and Protection of Privacy Act, R.S.O. 1990 c.M.56, as amended ("MFIPPA") and/or the Personal Health Information Protection Act, 2004 ("PHIPA") with respect to the collection, use, disclosure, retention and protection of confidential, sensitive or personal (health) information under the Agency's custody and control. Under an MFIPPA request, all documents provided to the Agency by the Vendor pursuant to the procurement process which led to this Contract, and the Contract itself and associated documents, may be required by law to be made available to a requesting member of the public, with the possible exception that the party submitting certain information requests that it be treated as confidential and that there is an appropriate exemption to disclosure in MFIPPA, or a non-disclosure requirement in either MFIPPA or PHIPA.

- (c) The Bidder Submissions, along with all correspondence, documentation and information provided to the Agency by any Bidder in connection with or arising out of the Bidder Submission, once received by the Agency, shall become the property of the Agency and may be appended to any agreement and/or purchase order with the successful Bidder. Bidders must identify in their Bidder Submissions any scientific, technical, proprietary, commercial or other confidential information, the disclosure of which could cause them injury.
- (d) In public bids, the name of each Bidder and the lump sum price contained in their Bidder Submission shall be published on the Bidding System.
- (e) Where award is to be made by Regional Council, the Peel Police Services Board or the Board of Directors of Peel Housing Corporation, information regarding all Bidder Submissions, including names of each Bidder, lump sum prices and the annual or overall value of the Contract and/or Bidder Submissions shall be included in public reports to Regional Council or the relevant Boards such that the information is released publicly. The Bidder acknowledges that the Agency cannot guarantee it can honour requests to keep Bidder information confidential in light of applicable law requirements, and also in light of the need for transparency and public disclosure where release of Bidder information in public Council reports related to a specific project or procurement process is necessary.

19. **COLLUSION AND CONFLICT OF INTEREST**

- (a) By submitting a Bidder Submission, each Bidder represents and warrants that no member, officer or employee of the Agency or Council has or will have an interest, directly or indirectly, in the performance of the Contract, or in the supplies, work or business in connection with the said Contract, or in any portion of the profits thereof, or in any monies to be derived therefrom; the Bidder Submission is not made in collusion with any other Bidder making a Bidder Submission for the same goods and services and is, in all respects, fair and without fraud; and that neither it nor any of its subcontractors nor any of their respective representatives has any actual, apparent or potential conflict of interest or existing business or other

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relationship with the Agency or any or any other party or person providing advice or services to the Agency with respect to the Document or the Work or any of their respective representatives that gives rise or might give rise to an unfair advantage (a "Conflict of Interest"). Each Bidder acknowledges that it is within the Agency's discretion to determine whether a Conflict of Interest exists.

- (b) Should the Bidder give or offer any gratuity to or attempt to bribe any member of the Agency, or to commit collusion or fraud, the Agency shall be at liberty to reject the Bidder Submission or, if a Contract has been awarded, terminate the Contract forthwith, without liability to itself, and to rely upon the sureties as provided for.
- (c) By submitting a Bidder Submission for this Document, each Bidder thereby releases and forever discharges the Agency from any and all liability related to any determination the Agency may make regarding Conflicts of Interest, including any disqualification, prohibition, rejection or contract termination which may result therefrom.
- (d) In addition to all other rights in this Document or otherwise available at law or in equity, the Agency may, in its discretion, immediately disqualify a Bidder Submission or may terminate any contract entered into in connection with or resulting from the Document, without liability, penalty or cost, upon giving notice to the Bidder if the Bidder or any of their respective representatives fails to disclose or has failed to disclose any Conflict of Interest.

20. **HARMONIZED SALES TAX (HST) INFORMATION**

The Agency is subject to the payment of provincial and federal taxes imposed by the Provincial and Federal Governments and, if required, the collection of any withholding tax for non-resident Vendors. All prices within this document shall be quoted exclusive of HST.

21. **ACCESSIBILITY FOR ONTARIANS WITH DISABILITIES**

The Vendor shall comply with the *Accessibility for Ontarians with Disabilities Act* 2005, and its Regulations thereunder with regard to the provision of goods or services to persons with disabilities. The Vendor acknowledges that pursuant to the *Accessibility for Ontarians with Disabilities Act* 2005, the Region of Peel must, in deciding to purchase goods or services through its procurement process, consider accessibility for persons with disabilities to such goods or services. This legislation can be accessed through the following link to the Government of Ontario's website: ontario.ca/laws/statute/05a11. You may also access this link at peelregion.ca/procurement, "Bids and tenders, Additional information for bidders" and view the accessibility standards.

22. **INVOICING AND ELECTRONIC PAYMENT INSTRUCTIONS**

22.1 The Agency's method of payment is by Electronic Funds Transfer (EFT). The Vendor will be required to provide the Agency with the Application for Vendor Direct Deposit form containing original signatures in ink, by return mail, fax or hand delivered, the following banking information:

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22.1.1 Names of two Company Officers, their titles, e-mail addresses, fax numbers, and phone numbers. Note: Both Company Officers must sign off on any subsequent changes to the Vendor's banking information.

22.1.2 Company mailing and remittance addresses.

22.1.3 Banking information including a void cheque.

22.1.4 The Vendor is required to notify the Agency of any changes to this information immediately.

23. VENDOR AS CONSTRUCTOR

The Vendor acknowledges that, if the Agency does not enter into any other contracts for the project, the Vendor is the "constructor" and the "employer" within the meaning of the *Occupational Health and Safety Act* (Ontario) and the Vendor undertakes to carry out the duties, obligations and responsibilities of the constructor and the employer with respect to the project. Obligations include but are not limited to making necessary response and change to operations required by any level of government pursuant to applicable law, regulation or special emergency order in the event of any health, environmental, social, emergency or other risk, including but not limited to response to municipal, provincial or federal orders. If the Agency assesses that the Vendor has not made sufficient response and change to operations to be in compliance with applicable law related to same, the Agency may, as a contractual obligation under this Document or Contract award, require additional Work modifications or arrangements as part of the appropriate response by the Contractor to public health, occupational health and safety or construction safety or to the above-noted risks or other emergency circumstances, which the Contractors shall accommodate at no extra cost to the Agency in order to protect its workers, the public or the Agency's staff unless the Vendor can provide proof acceptable to the Agency of additional costs. In addition, the Agency may choose to set up a contingency allowance to draw from during the applicability of government orders or regulation related to public health, occupational health and safety or construction safety measures to deal with health, environmental, social, emergency or other extraordinary risks, meant to address future government orders or regulations which are not in place as of the date of closing of this Document but which arise in the course of the Work. For any change order related to the above circumstances, the Vendor shall submit details of extra costs and agrees to charge actual costs on a zero mark-up basis.

In this project, the Agency may have cause to enter into more than one contract for the project. Additionally, there may be instances where the Agency's staff are required to attend the project site for specified intervals to perform work associated with the project. In such cases, the Vendor is required and agrees to fulfill all of the duties, obligations and responsibilities of the "constructor" and

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“employer” with respect to the project and on behalf of the owner, in accordance with the terms and conditions set out in SC 15 of the Supplementary General Conditions, and the Guidelines set out in GUIDELINES FOR THE CONTRACTOR WHERE OWNER’S STAFF AND OTHER CONTRACTORS ARE REQUIRED TO PERFORM WORK ON THE PROJECT SITE below.

24. **EMERGENCY RESPONSE REQUIREMENTS**

- 24.1 In addition to the Contractor’s obligations to follow all applicable law pursuant to s. 1.4 in A-1 and s. 10.2.3, including but not limited to that applicable to public health, occupational health and safety and to construction safety, the parties acknowledge that there may arise circumstances, such as epidemics and pandemics, where they intend to cooperate in good faith with each other to resolve concerns which may arise related to health, environmental, social or other emergency circumstances, so as to continue the Work and to avoid any increases in Contract Price or delay in progress of the Work wherever possible.
- 24.2 The parties acknowledge the Delay terms in s. 6.5.3 related to causes beyond the Contractor’s control. There may be circumstances which arise after Contract Award, and relate to any contingency allowance which the Region of Peel may have put in place or which a party believes extend beyond or in addition to such contingency allowance terms, but which do not meet those circumstances in s. 6.5.3 and which the parties wish to discuss. Such topics may include the following non-exhaustive list:
- .1 stop Work;
 - .2 suspend Work;
 - .3 change Work;
 - .4 change Substantial Performance Date or Contract Completion;
 - .5 change critical path of Construction Schedule;
 - .6 change subcontractors or suppliers per GC 3.7,
- the parties agree to:
- .7 use s. 8.2.3 to conduct amicable discussions or negotiations;
 - .8 to work within Part 6 wherever possible to agree upon any changes;
 - .9 to work together notwithstanding s. 6.3.3 where needed; and,
 - .10 the parties agree that in such circumstances, s. 7.2.2 delay prior to termination by the Contractor shall be extended to 120 days or longer.
- 24.3 This section is to be distinguished from s. 10.2.7 as it is acknowledged that the circumstances for discussion in this regard relate to situations where health, environmental, social or emergency needs or government regulation related to same may dictate the Contractor’s response to, within the terms of the Contract, request changes which will not result in a change to Contract Price if they are discussed early and promptly or where a change to Contract Price may be agreed between the parties on

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a zero mark-up basis, and where it is the preference of both parties that the Work continue, even though subject to differing or extra health or safety obligations.

- 24.4 In such discussions or negotiations, the following is applicable:
- 24.4.1 changes in the Work would preferably be made by agreement;
 - 24.4.2 if changes are requested by the Contractor, there shall be no extra cost to the Owner or costs on a zero mark-up basis as may be agreed upon with the Owner; and
 - 24.4.3 if changes are requested by the Owner, there shall be no extra cost to the Owner unless the Contractor provides records as may be necessary to support a claim on a zero-mark-up basis to which the Owner could agree.

25. **SECURITY CLEARANCE**

Peel Regional Police requires that all Vendor personnel attending any Police facility unescorted, as well as the organizations that they represent, be subject to a security clearance prior to the commencement of any work. The successful Vendor will be required to have security clearance (background examination) forms completed and submitted for all employees and/or subcontracted employees who will be required to work on-site within 10 days of award. The security clearance process can take up to two months to complete. If the successful Vendor is unable to submit the completed forms within the stipulated time frame, or is unable to successfully satisfy the background examination(s) required, the Vendor will be disqualified and the award revoked at the Agency's discretion. In this situation, the award will then be given to the next "best" responsive and responsible Vendor at the sole discretion of the Agency. The Agency reserves the right to exercise this action as it deems necessary.

26. **EMPLOYEE IDENTIFICATION AND BUILDING ACCESS**

Vendor employees who have successfully met the criteria of the security clearance may, at the sole discretion of the Agency be provided with an identification badge. This identification badge must be worn at all times while the employee is working in any Peel Regional Police facility. This identification badge will remain the property of the Peel Regional Police and must be returned upon expiration/termination of this Contract or immediately upon the Agency's request. In the event that an employee supplied with an identification badge is no longer employed by the Vendor, the Vendor must: (a) notify the Agency immediately of the cessation of employment, and (b) obtain and immediately return the identification badge to the Agency. The Vendor's failure to return any Agency issued identification badges, access cards, keys or other Agency property (collectively referred to as property) will require the Vendor to file a police report with the Agency and be responsible for the replacement costs of any missing or lost property.

Supplementary Conditions to Contract CCDC2 - 2020

SCHEDULE 1

**Supplementary Conditions for Standard Construction Document CCDC2 2020
Stipulated Price Contract**

SC.1 GENER GENERAL

These Supplementary Conditions presuppose the use of the Standard Construction Document CCDC2 - 2020 Stipulated Price Contract. These "Supplementary Conditions" void, supersede or amend the "Agreement", "Definitions" and "General Conditions" as hereinafter provided, as the case may be.

SC.2 ARTICLE A-1 – THE WORK

1. Amend Article A-1 THE WORK as follows:

(a) **add** "diligently" to the beginning of paragraph 1.1.

(b) **add** new paragraph 1.4 as follows:

"1.4 provide all the labor, materials, equipment, machinery, Products and work including, without limitation, all Commissioning services required by the Contract Documents in order to fully complete and construct the Work and in accordance with, and satisfaction of, all applicable federal, provincial, municipal and local laws, regulations, rules, by-laws, guidelines, standards, permits, statutes, ordinances, and codes including, without limitation, those relating to occupational health and safety and any and all obligations, responsibilities and duties required by or set out in any site plan agreement or approval, attributable to the Place of the Work and/or the proposed development therein, and furnish efficient business and construction administration and superintendence consistent with the interests of the Owner."

SC.3 ARTICLE A-3 – CONTRACT DOCUMENTS

1. **Add** the following documents to the existing list of Contract Documents set out in Article A-3 CONTRACT DOCUMENTS:

- Addenda as assigned
- Instructions to Bidders
- Supplementary Conditions to CCDC2-2020
- Agreement to Bond
- Specifications

Division 01	General Requirements
01 11 00	Summary of Work
01 21 00	Allowances
01 25 00	Substitution Procedures
01-26-00	Contract Modification Procedures
01 29 00	Payment Procedures
01 31 19	Project Meetings

Supplementary Conditions to Contract CCDC2 - 2020

01 33 00	Submittal Procedures
01 35 29.06	Health and Safety Requirements
01 35 43	Environmental Procedures
01 41 00	Regulatory Procedures
01 42 13	Abbreviation and Acronyms
01 45 00	Quality Control
01 52 00	Construction Facilities
01 56 00	Temporary Barriers and Enclosures
01 61 00	Common Product Requirements
01 71 00	Examination and Preparation
01 73 00	Execution
01 74 00	Cleaning
01 74 19	Waste Management and Disposal
01 77 00	Closeout Procedures
01 78 00	Closeout Submittals
01 79 00	Demonstration and Training
Division 02	Technical Specifications
02 41 19.16	Selective Interior Demolition
02 42 00	Removal and Salvage of Construction Materials
Division 06	Technical Specifications
06 10 00	Rough Carpentry
06 20 00	Finish Carpentry
06 40 00	Architectural Woodwork
06 61 16	Solid Surfacing Fabrications
Division 07	Technical Specifications
07 84 00	Fire Stopping
07 92 00	Joint Sealant
Division 08	Technical Specifications
08 11 00	Steel Frames
08 14 16	Flush Wood Doors
08 80 00	Glazing
Division 09	Technical Specifications
09 21 16.8	Gypsum Board Assemblies
09 22 16	Non-Structural Metal Framing
09 30 13	Ceramic Tiling
09 30 50	Tile Setting Materials and Accessories
09 51 13	Acoustic Panel Ceilings
09 63 40	Stone Flooring
09 65 00.08	Resilient Flooring for Minor Works
09 65 19	Resilient Tile Flooring
09 68 13	Tile Carpeting
09 91 23	Interior Painting

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Division 10	Technical Specifications
10 28 00	Washroom Accessories
Division 21	Technical Specifications
21 00 00	Fire Protection
Division 22	Technical Specifications
22 00 00	Plumbing
Division 23	Technical Specifications
23 00 00	HVAC
23 05 01	Mechanical General Requirements
Division 26	Technical Specifications
26 00 00	Electrical
26 01 01	General Requirements
Division 27	Technical Specifications
27 00 00	Communications
Division 28	Technical Specifications
28 00 00	Fire Alarm System

Interior Materials and Finishes Schedule

5.3	Drawings
ID00	Cover Page,
ID1,	Basement Demolition & Construction Plans
ID2,	2 nd Floor Demolition & Construction Plans
ID3,	3 rd Floor Demolition & Construction Plans,
ID4,	Details & Door Schedule
E-1,	Legend & Schedules
E-2,	Partial Basement Floor Plans – Electrical
E-3,	Partial Second Floor Plans - Electrical
E-4,	Partial Third Floor Plans - Electrical
Ecom-5,	Partial basement & Second Floor Plans - Communications
Ecom-6,	Partial 3 rd Floor Plan - Communications
FP01a,	Project Information Proposed Sprinkler Layout
FP-1,	Project Information
FP-2,	Proposed Sprinkler Layout Second Floor
FP-3,	Proposed Sprinkler Layout Third Floor
M1a,	Partial Basement Floor Plans - HVAC
M1b,	Schedules & Details
M-2,	Partial Basement Floor Plans - Plumbing
M-3,	Partial Basement Floor Plan – Fire Protection
M-4,	Partial Second & Third Floor Plans - HVAC

Supplementary Conditions to Contract CCDC2 - 2020

M-5 Partial Second & Third Floor Plans – Plumbing & Fire Protection

-CCDC2 Stipulated Price Contract 2020 - This is not attached but forms part of the contract

- Digital Bid Bond

-Form of Release at Substantial Performance of the Work

- Performance Bond substantially in the form required under the
Construction Act - This is not attached but forms part of the Contract

- Labour and Material Payment Bond substantially in the form required
under the *Construction Act* - This is not attached but forms part of the
Contract

- Online Bidding System forms

2. **Add** new paragraphs 3.2 and 3.3 to Article A-3 CONTRACT DOCUMENTS, as follows:

“3.2 If either the Specifications or the Request for Tender (or other procurement document issued by the Owner) provide for more than one improvement to be made under the Contract, and such improvements are to be made to lands that are not contiguous (each, a “*Non-Contiguous Improvement*”), then each such improvement is deemed to be made and performed under a separate contract for the purposes determining Substantial Performance of the Work, Ready-for-Takeover, completion of the contract, and for any other purpose under section 2 of the Payment Legislation, and the relevant provisions of this Contract will be deemed amended accordingly.

3.3 Paragraph 3.2 will apply to all of the Contractor’s contracts with its Subcontractors and Suppliers working on each such improvement on a pass through basis. The Contractor shall include in all of its contracts with Subcontractors and Suppliers notice of such deeming of separate contracts for such purposes, and shall ensure that it separates the Work and the supply of Products for each improvement.”

SC.4 ARTICLE A-5 PAYMENT

1. **Delete** ARTICLE A-5 PAYMENT in its entirety and **replace** with the following:

“ARTICLE A-5 PAYMENT

5.1 Subject to, and in accordance with, the provisions of the Contract Documents and the Payment Legislation the Owner shall:

.1 make monthly progress payments to the Contractor on account of the Contract Price when due in the amount certified by the Consultant together with such Value Added Taxes as may be applicable to such amount certified by the Consultant;

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- .2 on the 61st Day following Substantial Performance of the Work, pay the Contractor the unpaid balance of the basic holdback amount when due together with such Value Added Taxes as may be applicable to such payment; and
 - .3 upon the issuance of the final certificate for payment, pay to the Contractor the unpaid balance of the Contract Price when due together with such Value Added Taxes as may be applicable to such payment.
- 5.2 As such payments become due, the Contractor shall, in accordance with the terms of its agreements with any Subcontractors, Suppliers and workmen, pay all of its Subcontractors, Suppliers and workmen in full on account of work properly performed or Products properly supplied, as applicable, less any holdback monies retained in compliance with the Payment Legislation.
- 5.3 In the event of loss or damage occurring where payment becomes due under the property and boiler and machinery insurance policies, payments shall be made to the Contractor in accordance with the provisions of GC 11.1 - INSURANCE of the General Conditions.
- 5.4 Interest
 - .1 Should either party fail to make payments as they become due under the terms of the Contract or in an award by arbitration or court, interest at the greater of one per cent per annum above the bank rate and the minimum rate required under the Payment Legislation on such unpaid amounts shall also become due and payable until payment. Such interest shall be compounded on a monthly basis. The bank rate shall be the rate established by the Bank of Canada as the minimum rate at which the Bank of Canada makes short term advances to the chartered banks.
 - .2 Interest shall apply at the rate and in the manner prescribed by paragraph 5.4.1 of this Agreement on the amount of any claim advanced and for which the Contractor is thereafter entitled to payment, either pursuant to Part 8 - Dispute Resolution of the General Conditions, or otherwise, from the date the amount would have been due and payable under the Contract, had it not been in dispute, until the date it is paid."

SC.5 ARTICLE A-6 RECEIPT OF AND ADDRESSES FOR NOTICES IN WRITING

- 1. In paragraph 6.2, **delete** "or by other form of electronic communication during the transmission of which no indication of failure of receipt is communicated to the sender."
- 2. **Add** new paragraph 6.6 to Article A-6 RECEIPT OF AND ADDRESSES FOR NOTICES IN WRITING, as follows:

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“6.6 In addition to the addresses, requirements and timelines set out in this paragraph 6.6, the following applies:

- .1 for the purposes of Part I.1 the *Construction Act* (Prompt Payment) and Part 5 - PAYMENT,
 - (i) applications for payment and Proper Invoices will be considered given or delivered by the Contractor to the Owner when they are received by the Owner and such receipt can be verified; and
 - (ii) notices of non-payment will be considered to have been given or delivered by the Owner to the Contractor when they have been sent by the Owner and such delivery can be verified, and
- .2 for the purposes of Part II.1 of the *Construction Act* (Adjudication), any notices, communications or delivery of documents to be given under the Payment Legislation will:
 - (i) in the case of the Owner, be given by the Contractor, by electronic mail, to adjudication@peelregion.ca and to the individuals and locations indicated in the Owner's Notice in Writing delivered to the Contractor prior to the commencement of the Work; and
 - (ii) in the case of the Contractor, be given by the Owner to individuals and locations indicated in the Contractor's Bidder Submission.”

SC.6 ARTICLE A-7 LANGUAGE OF THE CONTRACT

1. **Delete** paragraph 7.1 and **replace** with the following:

“7.1 When the Contract Documents are prepared in both English and French languages, it is agreed that in the event of any apparent discrepancy between the English and French versions, the English language shall prevail.”

SC.7 ARTICLE A-9 ASSIGNMENT OF SUBCONTRACTS

1. **Add** new ARTICLE A-9 - ASSIGNMENT OF SUBCONTRACTS, as follows:

“ARTICLE A-9 ASSIGNMENT OF SUBCONTRACTS

9.1 The Owner shall not be deemed by virtue of the Contract or for any other reason to have any contractual relationship with or obligation to any Subcontractor or Supplier but the Contractor hereby agrees that in the event that:

- .1 the Contract is terminated; or
- .2 the Contractor's right to continue the Work is terminated;

and at the sole and absolute option of the Owner, any or all subcontracts for Work or Products as may be selected by the Owner, in its sole and absolute discretion, shall, upon notice to the Contractor and the affected Subcontractors and Suppliers from the Owner, be assigned to the Owner, without any further action being necessary from the Contractor or the

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affected Subcontractors and Suppliers and in order to ensure the Owner's rights, the Contractor shall:

.3 contractually obligate each of its Subcontractors and Suppliers to agree that each such subcontract shall be assignable, at the Owner's option, to the Owner, upon delivery of the notice described above, in the event that:

- (i) the Contract is terminated; or
- (ii) the Contractor's right to continue the Work is terminated.

9.2 The Contractor shall provide satisfactory evidence to the Owner that this obligation has been fulfilled."

SC.8 DEFINITIONS

1. In the definition of "Change Directive" **delete** the words "within the general scope of the Contract Documents".
2. In the definition of "Consultant" **add** the following sentence after the last sentence:

"The words 'Engineer', 'Architect' or 'Consultant' wherever used in the Contract Documents shall be regarded as synonymous."
3. In the definition of "Contractor" add the following sentence after the second sentence:

"For the purpose of the Contract, the words 'Contractor', 'Vendor' or 'General Contractor' shall be regarded as synonymous."
4. In the definition of "Drawings" **add** "and approved, in writing, by the Owner" after the word "issued," in the second line.
5. In the definition of "Place of the Work" **add** the following sentence:

"The term 'Place of the Work' and 'Site' wherever used in the Contract Documents shall be regarded as synonymous."
6. In the definition of "Ready-for-Takeover" delete everything after "when" and replace with "when the Owner confirms in writing that the Contractor has achieved Ready-for-Takeover in accordance with paragraph 12.1.4".8.
7. In the definition of "Shop Drawings" **delete** "which the Contractor provides" and **replace** with "to be provided by the Contractor".
9. In definition "Specifications" **add** "and approved, in writing, by the Owner" after "issued," in the first line.
10. In definition "Work" **add** ", Products, installation, Commissioning and Testing, checkout, start-up, testing" after "total construction".
11. **Delete** definition "26. Working Day" in its entirety and **replace** with the following:

"Working Day

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Working Day means a day when the Regional Municipality of Peel is open, Monday to Friday, and does not include weekends or statutory holidays.”

12. **Add** the following new definitions in the appropriate order alphabetically:

“Authorities Having Jurisdiction

The phrase Authorities Having Jurisdiction or the term Authorities means those authorities having jurisdiction under law over the Work or parts thereof.

Commission and Test

Commission and Test means, and Commissioning and Testing refers to, the procedure which includes testing, reviewing, inspecting, checking, testing, adjusting and measuring Work performed by the Contractor to demonstrate and verify the installation, operation and performance of all components and the entire system, including certification of any such Commissioning and Testing.

Construction Schedule

Construction Schedule means the schedule indicating the timing of major activities of the Work submitted by the Contractor and approved in writing by the Owner including attaining Substantial Performance of the Work by the Substantial Performance Date as described in GC 3.5 - CONSTRUCTION SCHEDULE.

Excess Soil

Excess Soil includes “excess soil” within the meaning of the Excess Soil Regulation.

Excess Soil Legislation

Excess Soil Legislation means any laws, ordinances, rules, regulations or codes, which are or become in force during the performance of the Work dealing with the excavation, management, handling, storage, removal, disposal and transportation of Excess Soil including, the Excess Soil Regulation.

Excess Soil Regulation

Excess Soil Regulation means the On-Site and Excess Soil Management Regulation (O. Reg. 406/19).

Hazardous Material

Hazardous Material means, collectively, any contaminant, designated substance, waste, hazardous waste or subject waste (as defined in the Ontario Environmental Protection Act and any associated regulations as amended from time to time (the “EPA”) or the *Ontario Occupational Health & Safety Act* and any associated regulations, as amended from time to time (the “OHSA”)), toxic substance (as defined in the *Canadian Environmental Protection Act* and any associated regulations, as amended from time to time (the “CEPA”)), dangerous goods (as defined in the *Transportation of Dangerous Goods Act* (Canada) and any associated regulations, as amended from time to time (“TDGA”)), or pollutant (as defined in the EPA), or any other substance or material which, when released

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to the natural environment, is likely to cause harm, injury, loss, damage, impairment or degradation to the natural environment or a risk of harm, injury, loss, damage, or impairment to human health and safety, including asbestos, “PCBs”, arsenic, silica and any other contaminant, substance, or material defined or regulated in, or for purposes of, any applicable law. Whenever the terms “toxic and hazardous substances” is used in the Contract, it shall be deemed amended to read “Hazardous Material”.

Install

Install means the placement of materials, equipment, or components, including receiving, unloading, transporting, storage, uncrating and installing, and performance of such testing and finish work as is compatible with the degree of installation specified.

Other Contractor

Other Contractor means an individual, firm, partnership or corporation having a separate contract with the Owner for work other than that required by the Contract Documents.

Project Leader

Project Leader means the “project leader” within the meaning of the Excess Soil Regulation.”

Proper Invoice

Proper Invoice means an application for payment in the form of invoice provided by the Owner to the Contractor, if applicable, containing the information that may be required for the application for payment to constitute a “proper invoice” under the Payment Legislation, including the following:

1. All of the information specified to be included in a proper invoice as set out in section 6.1 of the *Construction Act*, namely:
 - a. the Contractor’s name and address;
 - b. the date of the application for payment and the period during which the Work was performed;
 - c. information identifying the authority, whether in the Contract or otherwise, under which the Work was performed;
 - d. a description, including quantity where appropriate, of the Work performed and Products supplied;
 - e. the amount payable for the Work performed, and the payment terms; and
 - f. the name, title, telephone number and mailing address of the person to whom payment is to be sent;
2. an original statutory declaration in the form of CCDC 9A, or other form of statutory declaration that includes the same unqualified declaration, certifying that all accounts of the Contractor, including for the

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- subcontracts, construction machinery and equipment, materials, Products, labour and other indebtedness which may have been incurred by the Contractor and for which the Owner might in any way be held responsible have been paid in full, except for amounts properly retained as holdback or as an identified amount in dispute;
3. the total amount of expenditures to date and the total estimated expenditures to be made for the remaining balance of the Work;
 4. after the first application for payment, evidence of compliance with the applicable worker's compensation legislation at the Place of the Work, including payments due thereunder;
 5. any certificates, inspection reports, or data resulting from Commissioning and Testing required under the Contract Documents confirming the satisfactory completion of such Commissioning and Testing;
 6. payment receipts for Products and materials purchased under conditional sales contracts;
 7. a breakdown of approved Change Orders and percentage completed of each shall be included, in a form satisfactory to the Owner;
 8. all documents evidencing that the Work complies with the Excess Soil Legislation and such other documents as required by the Excess Soil Legislation; and
 9. any additional information that the Owner or the Consultant may reasonably require."

Provide

Provide means to supply and install or supply, install and connect as applicable, complete and in place, including accessories, finishes, tests, and services required to render each item so specified complete and ready for use.

Release

Release means a release by the Contractor substantially in the form set out in the Contract Documents or as the Owner may prescribe.

Reports

Reports means the Reports set out in Article A-3 - CONTRACT DOCUMENTS.

Rules of Mediation and Arbitration

Rules of Mediation and Arbitration mean the rules as provided in CCDC 40 in effect at the time of bid close."

Substantial Performance Date

Substantial Performance Date means the date by which the Contractor shall attain Substantial Performance of the Work as specified in Article A-1 - THE WORK, or, if there are Non-Contiguous Improvements, the dates by which the

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Contractor shall attain Substantial Performance of the Work for a given improvement as specified in Article A-1 - THE WORK.

Supply or Furnish

Supply or Furnish means fabrication or procurement of materials, equipment, or components, or performance of services to the extent specified and shown. Where used with respect to materials, equipment, or components, the term includes crating and delivery to the Place of the Work but is not intended to include installation of items, either temporary or final."

SC.9 GC 1.1 CONTRACT DOCUMENTS

1. **Delete** the first sentence in paragraph 1.1.1 and **replace** it with the following:

"1.1.1 The intent of the Contract Documents is to include the construction, labor, Products, Construction Equipment and other services necessary, complementary or ancillary, for the performance and completion of the Work by the Contractor in accordance with the Contract Documents or properly inferable from them."
2. **Delete** paragraphs 1.1.3 and 1.1.4 and **replace** them with the following:

"1.1.3 The Contractor shall review the Contract Documents and shall report promptly to the Owner and the Consultant any error, inconsistency, or omission the Contractor may discover. If the Contractor does discover any error, inconsistency, or omission in the Contract Documents, the Contractor shall not proceed with the Work affected until the error, inconsistency or omission has been addressed and in dealing with such error, inconsistency or omission the Contractor shall co-operate with the Owner in good faith to resolve such errors, inconsistency or omission so as to avoid any increase in the Contract Price or delay in the progress of the Work. Notwithstanding the foregoing, inconsistencies and omissions shall not include lack of reference on the Drawings or in the Specifications to labour and/or Products that are required or normally recognized within respective trade practices as being necessary for the complete execution of the Work.

1.1.4 The Contractor declares and represents that in entering into the Contract with the Owner for the performance of the Work, it has reviewed any and all documentation including, without limitation, the Reports provided by the Owner and has either visually investigated for itself the character of the Work to be done and all local conditions including, without limitation, the position of all pole lines, conduits, watermains, sewers and other underground and overground utilities and structures, or that, not having so reviewed or visually investigated, the Contractor has assumed and does hereby assume all risk of conditions now existing or arising in the course of the Work which could have been reasonably identified by a visual inspection or which are identified or inferred in any information provided by the Owner including, without limitation, the Reports, which might or could make the Work, or any items thereof more expensive in

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character, or more onerous to fulfill, than was contemplated or known when the Contract was signed.”

3. In paragraph 1.1.5.1 **add** after “from highest to lowest, shall be:”

- Executed Agreement
- Addenda as Assigned
- Instructions to Bidders
- Supplementary Conditions to CCDC2-2020
- Agreement to Bond
- Specifications

Division 01 General Requirements

01 11 00	Summary of Work
01 21 00	Allowances
01 25 00	Substitution Procedures
01-26-00	Contract Modification Procedures
01 29 00	Payment Procedures
01 31 19	Project Meetings
01 33 00	Submittal Procedures
01 35 29.06	Health and Safety Requirements
01 35 43	Environmental Procedures
01 41 00	Regulatory Procedures
01 42 13	Abbreviation and Acronyms
01 45 00	Quality Control
01 52 00	Construction Facilities
01 56 00	Temporary Barriers and Enclosures
01 61 00	Common Product Requirements
01 71 00	Examination and Preparation
01 73 00	Execution
01 74 00	Cleaning
01 74 19	Waste Management and Disposal
01 77 00	Closeout Procedures
01 78 00	Closeout Submittals
01 79 00	Demonstration and Training

Division 02 Technical Specifications

02 41 19.16	Selective Interior Demolition
02 42 00	Removal and Salvage of Construction Materials

Division 06 Technical Specifications

06 10 00	Rough Carpentry
06 20 00	Finish Carpentry
06 40 00	Architectural Woodwork
06 61 16	Solid Surfacing Fabrications

Division 07 Technical Specifications

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07 84 00 Fire Stopping
07 92 00 Joint Sealant

Division 08 Technical Specifications

08 11 00 Steel Frames
08 14 16 Flush Wood Doors
08 80 00 Glazing

Division 09 Technical Specifications

09 21 16.8 Gypsum Board Assemblies
09 22 16 Non-Structural Metal Framing
09 30 13 Ceramic Tiling
09 30 50 Tile Setting Materials and Accessories
09 51 13 Acoustic Panel Ceilings
09 63 40 Stone Flooring
09 65 00.08 Resilient Flooring for Minor Works
09 65 19 Resilient Tile Flooring
09 68 13 Tile Carpeting
09 91 23 Interior Painting

Division 10 Technical Specifications

10 28 00 Washroom Accessories

Division 21 Technical Specifications

21 00 00 Fire Protection

Division 22 Technical Specifications

22 00 00 Plumbing

Division 23 Technical Specifications

23 00 00 HVAC
23 05 01 Mechanical General Requirements

Division 26 Technical Specifications

26 00 00 Electrical
26 01 01 General Requirements

Division 27 Technical Specifications

27 00 00 Communications

Division 28 Technical Specifications

28 00 00 Fire Alarm System

Interior Materials and Finishes Schedule

5.3 Drawings
ID00 Cover Page,

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ID1,	Basement Demolition & Construction Plans
ID2,	2 nd Floor Demolition & Construction Plans
ID3,	3 rd Floor Demolition & Construction Plans,
ID4,	Details & Door Schedule
E-1,	Legend & Schedules
E-2,	Partial Basement Floor Plans – Electrical
E-3,	Partial Second Floor Plans - Electrical
E-4,	Partial Third Floor Plans - Electrical
Ecom-5,	Partial basement & Second Floor Plans - Communications
Ecom-6,	Partial 3 rd Floor Plan - Communications
FP01a,	Project Information Proposed Sprinkler Layout
FP-1,	Project Information
FP-2,	Proposed Sprinkler Layout Second Floor
FP-3,	Proposed Sprinkler Layout Third Floor
M1a,	Partial Basement Floor Plans - HVAC
M1b,	Schedules & Details
M-2,	Partial Basement Floor Plans - Plumbing
M-3,	Partial Basement Floor Plan – Fire Protection
M-4,	Partial Second & Third Floor Plans - HVAC
M-5	Partial Second & Third Floor Plans – Plumbing & Fire Protection

-CCDC2 Stipulated Price Contract 2020 - This is not attached but forms part of the contract

- Digital Bid Bond

-Form of Release at Substantial Performance of the Work

- Performance Bond substantially in the form required under the
Construction Act - This is not attached but forms part of the Contract

- Labour and Material Payment Bond substantially in the form required
under the *Construction Act* - This is not attached but forms part of the
Contract

- Online Bidding System forms

4. In paragraph 1.1.9 **add** the following at the end of the provision:
“or in establishing the extent of the work to be performed by a trade.”
5. In the first sentence of paragraph 1.1.10 **delete** “and shall remain the
Consultant’s property” and **replace** with “not the Contractor’s property”.

SC.10 GC 1.4 ASSIGNMENT

1. **Delete** paragraph 1.4.1 in its entirety and **replace** with the following:

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- “1.4.1 The Contractor may not assign, subcontract, or otherwise transfer the Agreement or any of its rights, benefits, and/or obligations, without the Owner’s prior written consent.
- 1.4.2 The Owner may assign, transfer, convey, or otherwise dispose of the Agreement or any of its rights, benefits, warranties, and/or obligations, in whole or in part, without the prior written consent of, but with written notice to the Contractor in the following circumstances:
- a) to one or more municipalities;
 - b) to a municipal service board;
 - c) to a municipal business corporation; or
 - d) if an assignment, transfer, conveyance or other disposition is required for any other reason, including as a result of, or pursuant to, a court order or a legislative act, including the “*Hazel McCallion Act (Peel Dissolution)*, 2023,” as well as any regulations made thereunder; (collectively the “*Assignee*”).
- 1.4.3 Upon assignment, transfer, conveyance or other disposition to the *Assignee* of the Owner's obligations under the Agreement, the Owner shall be released from its obligations arising thereunder.
- 1.4.4 In the event of an assignment, transfer, conveyance or other disposition in accordance with section 1.4.2 above, the Contractor shall be responsible to immediately transfer any insurance, warranties, securities, or other similar obligations to the Assignee, or to make alternative arrangements for such obligations to the satisfaction of the *Assignee*.”

SC.11 GC 1.5 TIME IS OF THE ESSENCE OF THE CONTRACT

1. **Add** new GC 1.5 TIME as follows:

“GC 1.5 TIME

- 1.5.1 All time limits stated in the Contract Documents are of the essence of the Contract.”

SC.12 CONFIDENTIALITY

1. **Add** new GC 1.6 CONFIDENTIAL INFORMATION as follows:

“**GC 1.6 CONFIDENTIAL INFORMATION**

- 1.6.1 The Contractor agrees to protect and maintain the confidentiality of all personal or other information, including all personal health information, that the Contractor accesses or of which the Contractor acquires knowledge of as a result of the performance of its obligations under this Contract, and agrees to use, collect, disclose, retain, protect and dispose of the personal (health) information only in accordance with all privacy legislation applicable to the Owner where it is acting on behalf of the Owner. Disclosure of any information shall be done only with the Owner’s prior written consent. The provisions of the indemnity clause in this Contract apply to any breach of privacy or confidentiality in this clause. The Contractor shall ensure that its directors, officers, employees, agents,

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subcontractors and anyone else for whom it is responsible in law all adhere to the requirements of this section regarding privacy and confidentiality.

- 1.6.2 The Owner, and the Owner's responsibilities under this Contract, are subject to all applicable privacy legislation including the Municipal Freedom of Information and *Protection of Privacy Act*, R.S.O. 1990 c.M.56, as amended ("MFIPPA") and/or the *Personal Health Information Protection Act*, 2004 ("PHIPA") with respect to the collection, use, disclosure, retention and protection of confidential, sensitive or personal (health) information under the Owner's custody and control. Under an MFIPPA request, all correspondence, documentation and information provided to the Owner by the Contractor, including the Contract itself and associated documents, may be required by law to be made available to a requesting member of the public, with the possible exception that the party submitting certain information requests that it be treated as confidential and that there is an appropriate exemption to disclosure in MFIPPA, or a non-disclosure requirement in either MFIPPA or PHIPA.
- 1.6.3 All correspondence, documentation and information provided to the Owner by the Contractor in connection with or arising out of the Contract, once received by the Owner, shall become the property of the Owner. The Contractor must identify to the Owner in writing if the disclosure of any such correspondence, documentation or information, any scientific, technical, proprietary, commercial or other confidential information, could cause the Contractor injury.
- 1.6.4 The Contractor acknowledges that the Owner cannot guarantee it can honor requests to keep Contractor information confidential in light of applicable law requirements, and also in light of the need for transparency and public disclosure where release of the Contractor's information in public Council reports related to a specific project is necessary."

SC.13 GC 1.7 CO-OPERATION, CONSULTATION AND CO-ORDINATION

1. **Add** new GC 1.7 CO-OPERATION, CONSULTATION AND CO-ORDINATION as follows:

"GC 1.7 CO-OPERATION, CONSULTATION AND CO-ORDINATION

- 1.7.1 The Contractor shall, at all times and as part of the Work, fully assist, cooperate, consult and coordinate with the Consultant and any other consultants, Other Contractors, the Owner's own forces and other entities retained or identified by the Owner which are related to the Project (each, an "**Other Entity**" and collectively, the "**Other Entities**"). The objective of such assistance, co-operation, consultation and co-ordination is to make certain the Work is properly coordinated with and integrated with the work and services of the Other Entities.
- 1.7.2 Without limiting the generality of any other provision in the Contract, the Contractor shall attend all design, construction, general co-ordination and

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progress meetings relating to the Work between the Consultant, the Owner and Other Entities and any other meeting relating to the Project as requested by the Owner to discuss and resolve all matters and issues relating to the Project. The Contractor shall, on a timely basis, prepare and distribute detailed minutes to the Owner of the construction and progress meetings which it attends, if requested by the Owner.”

SC.14 GC 2.2 ROLE OF THE CONSULTANT

1. **Add** the following sentence to paragraph 2.2.3 “The presence of such project representatives at the Place of the Work will not abrogate any of the Contractor’s responsibility to perform the Work as required by the Contract Documents.”
2. In paragraph 2.2.5 **add** “to the Contractor” after the words “the Consultant will not be responsible” in each of the first two sentences.
3. In paragraph 2.2.6 **delete** “Except with respect to GC 5.1 - FINANCING INFORMATION REQUIRED OF THE OWNER, the” and **replace** with “The”.
4. In paragraph 2.2.16 **add** “to the Contractor” after the words “the Consultant does not guarantee”.
5. In paragraph 2.2.18 **delete** “against whom the Contractor makes no reasonable objection and”.

SC.15 GC 2.3 REVIEW AND INSPECTION OF THE WORK

1. In the second sentence of paragraph 2.3.1 **delete** “the Consultant” and **replace** with “Consultant and Owner”.
2. **Amend** paragraph 2.3.2 as follows:
 - (a) **delete** “tests” and **replace** with “Commissioning and Testing”;
 - (b) **add** “regulations, rules, by-laws, standards, guidelines, permits, statutes, codes,” before “laws or ordinances”;
 - (c) **add** “, and any applicable Commissioning and Testing” at the end of the first sentence; and
 - (d) **add** “and of any applicable Commissioning and Testing” at the end of the second sentence.
3. In paragraph 2.3.6 **delete** “designated in” and **replace** with “required by” and **add** “or required by the Consultant” after “Contract Documents”.
4. In paragraph 2.3.7 **delete** “designated in” and **replace** with “required by”.

SC.16 GC 2.4 DEFECTIVE WORK

1. In paragraph 2.4.1 **delete** “Consultant” in the first instance and **replace** with “Consultant and/or Owner” and **add** “, at the Contractor’s expense,” after “Contract Documents,”

SC.17 GC 3.2 CONSTRUCTION BY THE OWNER OR OTHER CONTRACTORS

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1. In paragraph 3.2.2.3, **add** the words “as the Owner considers appropriate” after the words “GC 11.1 - INSURANCE” in the second line.
2. In paragraph 3.2.3.4 **add** “Failure by the Contractor to so report shall invalidate any claims against the Owner by reason of deficiencies in the work of the Other Entities except those deficiencies not then reasonably discoverable.”
3. **Add** new paragraph 3.2.3.5 as follows:
 “.5 coordinate and perform the Work with care and diligence so as to ensure that the Owner and the Other Entities will be in a position to proceed according to schedule with the delivery, installation and testing of the equipment and other components to be incorporated into the Project and allow the Owner and the Other Entities reasonable opportunity to receive and store materials and products on site and to perform their work.”

SC.18 GC 3.4 CONSTRUCTION SCHEDULE

1. **Delete** paragraph 3.4.1 and **replace** with the following:
 “3.4.1 The Contractor shall:
 - .1 prior to commencement of construction, prepare and submit to the Owner and the Consultant for their review and acceptance a construction schedule indicating the critical path for the Project, using Microsoft Project (.mpp format) or equivalent demonstrating that the Work will be performed in conformity with the Contract Time, and shall conform to the phasing and sequencing requirements for the Work as set out in the Contract Documents or as otherwise required by the Consultant or the Owner including, without limitation, a Products delivery schedule with respect to the Products whose delivery is critical to the schedule of the Work. The Contractor shall provide the schedule information required by this paragraph 3.4.1.1 in both electronic format and hard copy. Once approved by the Owner and the Consultant, the construction schedule submitted by the Contractor under this paragraph 3.4.1.1, as updated by the Contractor and approved by the Owner, shall become the “Construction Schedule”;
 - .2 monitor the progress of the Work on a weekly basis relative to the Construction Schedule and update the Construction Schedule on a monthly basis;
 - .3 perform the Work in accordance with the Construction Schedule;
 - .4 advise the Consultant of any revisions required to the Construction Schedule as a result of extension of the Contract Time in accordance with PART 6 - CHANGES IN THE WORK; and
 - .5 identify potential variances between scheduling and scheduled completion dates and implement necessary adjustments in the Construction Schedule in order to attain Substantial Performance

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of the Work by the Substantial Performance Date and to attain the date set out for Ready-for-Takeover in the Construction Schedule.

2. **Add** new paragraph 3.4.2 and new paragraph 3.4.3 as follows:

“3.4.2 On request of the Consultant, the Contractor shall provide information regarding the progress of the Work or any part of it, or, copies, schedules and orders covering materials, components and services. The Contractor shall cooperate fully with the Consultant, and shall ensure that all Subcontractors and Suppliers and anyone for whom the Subcontractors and Suppliers may be responsible also cooperate and make available on request the same documents.

3.4.3 Without limiting the other obligations of the Contractor under GC 3.4, the Contractor shall not amend the Construction Schedule (including, without limitation, any changes to the critical path) without the prior written approval of the Owner.”

SC.19 GC 3.5 CONTRACTOR’S PERSONNEL COMMITMENT

1. **Delete** GC 3.5 - SUPERVISION in its entirety and **replace** it with the following:

“GC 3.5 CONTRACTOR’S PERSONNEL COMMITMENT

3.5.1 The Contractor shall furnish a competent and adequate staff, who shall be in attendance at the Place of the Work at all times, as necessary, for the proper administration, co-ordination, supervision and superintendence of the Work; organize the procurement of all materials and equipment so that they will be available at the time they are needed for the Work; and keep an adequate force of skilled workmen on the job to complete the Work in accordance with all requirements of the Contract Documents.

3.5.2 Prior to commencement of the Work, the Contractor shall select a competent and experienced full time project manager (the “**Project Manager**”), and a competent and experienced full time site supervisor (the “**Site Supervisor**”) who shall be in attendance at the Place of the Work at all times. The Project Manager shall have full responsibility for the prosecution of the Work, with full authority to act in all matters as may be necessary for the proper co-ordination, supervision, direction and technical administration of the Work, who shall attend site meetings in order to render reports on the progress of the Work and who shall have authority to bind the Contractor in all matters related to this Contract. The Project Manager and the Site Supervisor shall be satisfactory to the Owner and shall not be changed except for good reason and with the prior written approval of the Owner.

3.5.3 The Project Manager and Site Supervisor shall represent the Contractor at the Place of the Work and notices and instructions given to the Project Manager and/or the Site Supervisor shall be held to have been received by the Contractor.

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3.5.4 The Contractor may not change its Project Manager or its Site Supervisor without the Owner's prior written approval which shall not be unreasonably withheld. Further, the Contractor shall not employ or continue to employ on the Work anyone to whom the Owner may reasonably object.

3.5.5. The Contractor shall provide the Owner and the Consultant with the names, addresses and telephone numbers of the Project Manager, the Site Supervisor and other responsible field persons who may be contacted for emergency and other reasons during non-working hours."

SC.20 GC 3.6 SUBCONTRACTORS AND SUPPLIERS

1. In paragraph 3.6.4 **add** "or anyone else performing the Work" after "Supplier".

2. **Add** new paragraph 3.6.7 as follows:

"3.6.7 The Contractor shall not change any of the Subcontractors or Suppliers proposed by it in writing and accepted by the Owner at the signing of the Contract without the Owner's prior written consent or execute any subcontracts for the performance of the Work without the Owner's prior written consent."

SC.21 GC 3.7 LABOUR AND PRODUCTS

1. **Delete** paragraph 3.7.1 and **replace** it with the following:

"3.7.1 The Contractor shall:

- .1 maintain good order and discipline among all personnel engaged on the Work;
- .2 not employ any persons on the Project whose labor affiliation (or lack thereof) is incompatible with other labor employed in connection with this Project or at the Place of the Work; and
- .3 act promptly on all problems of labor relations including grievances and jurisdictional disputes. The Contractor shall not employ on the Work anyone not skilled in the task assigned to it and the Owner has the right to require the Contractor to remove from the workforce for the Work any employee, representative or other personnel deemed by the Owner, acting reasonably, to be incompetent, careless or otherwise objectionable, or whose actions are contrary to public interest or inconsistent with the best interest of the Owner."

2. **Amend** paragraph 3.7.3 as follows:

(a) **add** "and free from defects" after "new"; and

(b) **delete** the second sentence of paragraph 3.7.3 and **replace** it with the following:

"All Products and workmanship shall be in every respect of the best quality and the Work shall be performed in accordance with the best

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modern practice. Whenever the Contract Documents, or directions of the Consultant, admit of a reasonable doubt about what is permissible, and when they fail to state the quality of any Work, the interpretation that requires the quality be consistent with the quality of similar Products specified is to be followed.”

3. **Add** new paragraph 3.7.4 as follows:

“3.7.4 The cost for overtime required beyond the normal working day to complete individual construction operations of a continuous nature, such as pouring or finishing of concrete or similar work, or work that the Contractor elects to perform at overtime rates without the Owner or the Consultant requesting it shall not be chargeable to the Owner and shall be at the sole cost and expense of the Contractor.”

4. **Add** new paragraph 3.7.5 as follows:

“3.7.5 The Owner and the Contractor acknowledge and agree that the beneficial ownership of any portion of the Products required by the Contract Documents to be incorporated and form part of the Work shall pass to the Owner immediately upon payment therefore or upon incorporation thereof as part of the Work, whichever first occurs. For greater certainty, title to Products delivered, but not installed, shall pass to the Owner when paid for (subject to any applicable holdback). The Contractor agrees to promptly execute and deliver to the Owner, from time to time as the Owner may require, any further documentation required to identify, evidence, perfect or protect the Owner’s beneficial, or registered, interest in the Products, including, without limitation, any registrations pursuant to the Personal Property Security Act (Ontario). Notwithstanding the foregoing, the Contractor acknowledges and agrees that it shall continue to bear the risk of loss or damage with respect to the Work until the date of acceptance of the Work by the Owner in accordance with the Contract Documents.”

SC.22 GC 3.8 SHOP DRAWINGS

1. In paragraph 3.8.1 **add** “or as the Consultant may reasonably request” at the end of the paragraph.

SC.23 OPERATIONAL RISKS

1. **Add** new GC 3.9 - OPERATIONAL RISKS as follows:

“GC 3.9 OPERATIONAL RISKS

- 3.9.1 The position of all pole lines, conduits, water mains, sewers and other underground and overground utilities and structures is not necessarily shown on the Contract Drawings, and, where shown, the accuracy of the position of such utilities and structures is not guaranteed. Before starting Work, the Contractor shall inform itself of the exact locations of such utilities and structures, and shall be liable for damages, as a result of any act or omission, to any utilities identified or reasonably to have been

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identified, whether or not the result of negligence, by those for whom he is responsible. Unless otherwise specified, the Contractor shall temporarily support or relocate such utilities and structures, or temporarily remove them, and restore them, to the satisfaction of the owners of the utilities and structures. The Contractor waives any claim and releases the Owner and the agents of the Owner from all liability for damages suffered as a result of such Contract Drawings or any operation required under this paragraph.

- 3.9.2 Permanent relocation of underground or overhead utilities will be performed and paid for by the Owner, if necessitated by coincidence of lines or grades, or both unless such relocation has been specifically included within the Work by the drawings or specifications. The Contractor shall be responsible for scheduling permanent relocations of utilities with the Work.
- 3.9.3 The Consultant will provide the Contractor in writing with benchmarks and points of reference to be used by it in setting out the Work. The Owner will be responsible only for the correctness of the information so supplied. From these benchmarks and points of reference the Contractor will do its own setting out. The setting out by the Contractor shall include but shall not be limited to the preparation of grade sheets, the installation of center lines stakes, grade stakes, offsets and site rails

GC 5.1 FINANCING INFORMATION REQUIRED OF THE OWNER

- 1. **Delete** GC 5.1 - FINANCING INFORMATION REQUIRED OF THE OWNER in its entirety and **replace** it with the following:

“GC 5.1 ESTIMATES

- 5.1.1 On the 25th day of each month during the Contract Time, the Contractor will deliver to the Consultant a draft of the Contractor's proposed application for payment for all of the Work performed by the Contractor in that month (a **“Draft Application”**), in order to facilitate and expedite payments under GC 5.2 - APPLICATIONS FOR PAYMENT, GC 5.3 – PAYMENT, GC 5.5 - FINAL PAYMENT, including an estimate of the Work to be performed and Products to be delivered at the date of such application for payment but before the end of that month and including any reports or certificates confirming the satisfactory completion of any Commissioning and Testing of any part of the Work that the Contractor will include in its final and proper application for payment pursuant to paragraph 5.2.1.
- 5.1.2 The Contractor shall review with the Consultant and the Owner, at a scheduled time, the Draft Application and the percentage of the Work completed for each item indicated in the schedule of values. This procedure shall be complied with for each Draft Application for payment.

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- 5.1.3 Nothing in GC 5.1 - ESTIMATES is intended to condition, pre-condition, prevent or delay the Contractor's right to submit its final and proper applications for payment in accordance with paragraph 5.2.1 of this Contract and the Payment Legislation."

SC.24 GC 5.2 APPLICATIONS FOR PAYMENT

1. **Delete** paragraphs 5.2.1 and 5.2.2 and **replace** with the following:

"5.2.1 Notwithstanding GC 5.1 - ESTIMATES and the submission of a Draft Application, the Contractor shall submit two copies of its final and proper application for payment to the Consultant and the Owner, in a form satisfactory to the Owner, monthly as the Work progresses on the first Working Day after the end of the month to which the application for payment relates. Deviation or incomplete submissions with respect to the form will require resubmission of the application for payment. Applications for payment not submitted on that day may be deferred by the Owner to the next following month. Applications for payment submitted after the 180th day after the end of the month to which the application for payment relates will not be accepted or paid for by the Owner.

5.2.2 The Contractor shall ensure that each application for payment for Work complies with the requirements set out in this Contract, and will include as part of it application for payment of all the documents and information required in this Part 5 - PAYMENT and required for a Proper Invoice, including any reports or certificates confirming the satisfactory completion of any Commissioning and Testing of any completed part of the Work. The Owner may, in its discretion, reject any application for payment that does not comply with GC 5.2 - APPLICATIONS FOR PAYMENT, or the Owner may withhold up to 100 per cent of the amounts otherwise payable in relation to that application for payment until such application for payment includes all of the documents and information required under this Part 5 - PAYMENT and for a Proper Invoice. Without limiting the foregoing, authorization for payment of products and materials purchased under conditional sales contracts shall not be made by the Owner until evidence of payment is submitted."
2. **Delete** paragraph 5.2.7 in its entirety.

SC.25 GC 5.3 PAYMENT

1. In paragraph 5.3.1.1 **delete** "10 calendar days" and **replace** with "5 Working Days"
2. **Delete** paragraph 5.3.1.2 in its entirety and **replace** with the following:

"subject to the certifications set out in the Consultant's certificate for payment and to the Payment Legislation, including the delivery of a notice of non-payment under the Payment Legislation, the Owner shall make payment to the Contractor on account as provided in Article A-5 of the Agreement - PAYMENT on or before 28 days after the date that the Consultant or the Owner receives the Contractor's application for payment and Proper Invoice in accordance with this Contract."

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3. **Add** new paragraphs 5.3.2 and 5.3.3 as follows:
- “5.3.2 If the Contractor fails to comply with paragraph 5.2 - APPLICATIONS FOR PAYMENT or paragraph 10.4 – WORKERS’ COMPENSATION, the Owner shall not be required to make payments to the Contractor until the obligation has been complied with.
- 5.3.3 Payment by the Owner pursuant to the Contract shall not preclude the Owner from thereafter disputing any of the items involved and shall not be construed as acceptance of any part of the Work.”

SC.26 GC 5.4 SUBSTANTIAL PERFORMANCE OF THE WORK AND PAYMENT OF HOLDBACK

1. **Add** “Subject to paragraph 3.2 of Article A-3 - CONTRACT DOCUMENTS,” at the beginning of paragraph 5.4.1.
2. **Delete** paragraphs 5.4.2 through 5.4.6, inclusive, in their entirety and replace them with the following:
- “5.4.2 At the time of issuance by the Consultant of the certificate of Substantial Performance of the Work, the Consultant shall:
- .1 notify the Contractor of the value of the Warranty Holdback required by paragraph 12.4 - WARRANTY SECURITY HOLDBACK, hereof.
- .2 prepare a separate certificate (the “Substantial Performance Payment Certificate”) showing:
- (i) the value of work completed to date,
- (ii) the value of outstanding or uncompleted work,
- (iii) the value of the required Warranty Holdback,
- (iv) the amount of the holdback being held in accordance with the Payment Legislation (allowing for any previous release of holdback to the Contractor in respect of completed Subcontractors, Suppliers and deliveries of pre-selected equipment),
- (v) the amount due the Contractor, and
- .3 prepare a payment certificate releasing to the Contractor the holdback held in accordance with the Payment Legislation in respect of Work performed up to the date of Substantial Performance of the Work which will certify, among other matters, that all documents and information have been delivered by the Contractor that are required under GC 5.4 – SUBSTANTIAL PERFORMANCE OF THE WORK AND PAYMENT OF HOLDBACK.
- 5.4.3 After the issuance of the certificate of Substantial Performance of the Work, the Contractor shall:

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- .1 submit an application for payment of the holdback amount containing all of the information and documents required under this Contract and of a Proper Invoice;
 - .2 an original statutory declaration in the form of CCDC 9A, or other form of statutory declaration that includes the same unqualified declaration, that all liabilities incurred by the Contractor and its Subcontractors and Suppliers in carrying out the Contract have been discharged, and that all liens in respect of the Contract and subcontracts thereunder have expired or have been satisfied, discharged or provided for by payment into court, to state that all accounts for materials, labour, subcontracts, Products, Construction Equipment, and other indebtedness which may have been incurred by the Contractor, or by any Subcontractor or Supplier, up to the date of Substantial Performance of the Work and for which the Owner might in any way be held responsible have been paid in full, except for amounts properly retained as a holdback or as an identified amount in dispute;
 - .3 submit a written undertaking by the Contractor to complete expeditiously any outstanding Work and to discharge all unfulfilled obligations under the Contract;
 - .4 submit the Contractor's final claim for all amounts incurred before and on the date of Substantial Performance of the Work;
 - .5 submit a Release by the Contractor;
 - .6 submit any certificates, inspection reports, or data resulting from Commissioning and Testing required under the Contract Documents confirming the satisfactory completion of such Commissioning and Testing; and
 - .7 submit all manuals, as-built drawings and other turnover documents required under the Contract Documents.
- 5.4.4 Notwithstanding the foregoing, if the Contractor has not provided the documents required by the General Conditions by the 30th day after the publication of the certificate of Substantial Performance of the Work, the Owner, at its discretion, shall be entitled to withhold an amount equal to up to 100 per cent of the amount of statutory holdback as security for the Contractor's delivery of the outstanding document(s). In the event of a withholding under this GC 5.4.4, the Owner shall pay the withheld amount to the Contractor upon the earlier of (a) the Contractor's delivery of such documents, (b) the end of the limitation period related to any claim that could arise from the Contractor's non-delivery, and (c) a determination by the Consultant that such withheld amount should be released to the Contractor.
- 5.4.5 Subject to the requirements of any Payment Legislation and the delivery by the Owner of a notice of non-payment under the Payment Legislation,

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the statutory holdback amount and any other holdback amount authorized by the certificate for payment of the holdback, shall become due and payable to the Contractor on the day following the expiration of the holdback period stipulated in the lien legislation applicable to the Place of the Work.”

3. **Add** new paragraph 5.4. as follows:

“5.4. If there are Non-Contiguous Improvements, then, pursuant to the Payment Legislation, the Owner shall release holdback in accordance with this GC 5.4 upon the issuance of a certificate of Substantial Performance of the Work for each such improvement. The parties acknowledge and agree that, notwithstanding any release of holdback pursuant to this paragraph 5.4. the Owner shall be entitled to withhold amounts for the purposes of and pursuant to GC 12.4 - WARRANTY HOLDBACK as if the Owner had not made any release of holdback pursuant to this GC 5.4.

SC.27 GC 5.5 FINAL PAYMENT

1. In paragraph 5.5.1 **add** “as defined in Section 2(3) of the Construction Act” after the words “Work is completed” and add “containing all of the documents and information required under the Contract or of a Proper Invoice and including all final reports and certificates confirming satisfactory completion of all required Commissioning and Testing, to the extent applicable” after the words “final payment”.

2. **Amend** paragraph 5.5.4 as follows:

- (a) **add** “and provided that the Contractor has satisfied the requirements of paragraph 5.5.1,” after “Place of the Work”; and
- (b) **delete** “5 calendar days after” and **replace** with “28 calendar days after”.

3. **Add** new paragraph 5.5.5 as follows:

“5.5.5 At the time of issuance by the Consultant of the final certificate of payment, the Consultant shall:

- .1 Prepare a certificate (the “**Completion Payment Certificate**”) showing:
 - (i) the final Contract Price,
 - (ii) the amount of the further 10 per cent holdback (based on the value of further work completed over and above the value of work completed shown in the Substantial Performance Payment Certificate),
 - (iii) the value of the required Warranty Holdback, and
 - (iv) the amount due to the Contractor.
- .2 Prepare a payment certificate releasing to the Contractor the further 10 per cent holdback. Subject to the provisions of the

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Payment Legislation, including the Owner's issuance of a notice of non-payment of holdback, and the submission by the Contractor of the documents required by the General Conditions, such further 10 per cent holdback shall become payable after 60 days from the date of completion of the Work as established by the final certificate of payment.

If, at the end of the Warranty Period, any monies are still being retained by the Owner as Warranty Holdback or for other reasons, the Consultant will issue a certificate (the "**Warranty Holdback Payment Certificate**") releasing the monies due the Contractor."

SC.28 GC 5.6 DEFERRED WORK

1. In paragraph 5.6.1 **delete** "If" and **replace** with "Subject to applicable lien legislation, if".

SC.29 GC 5.8 LIENS

1. **Add** new GC 5.8 LIENS as follows:

"GC 5.8 LIENS

- 5.8.1 Notwithstanding any other term or condition in the Contract Documents, the Owner shall not be obligated to make payment to the Contractor, if at any time such certificate or payment was otherwise due:
 - .1 a claim for lien arising from the performance of the Work has been registered against the Place of Work, or given to the Owner,
 - .2 a written notice of lien has been delivered to the Owner in accordance with the Payment Legislation; or
 - .3 the Owner or mortgagee of the Place of Work has received a written notice of lien.
- 5.8.2 In the event that a construction lien arising from the performance of the Work is registered against the Place of Work, or given to the Owner, the Contractor shall, within 10 calendar days, at its sole expense, vacate or discharge or otherwise remove the lien from title to the premises. If the lien is merely vacated, the Contractor shall, if requested, undertake the Owner's defence of any subsequent lawsuit commenced in respect of the lien at the Contractor's sole expense.
- 5.8.3 In the event that the Contractor fails or refuses to vacate or discharge a construction lien within the time prescribed above, if the Owner receives a notice of lien, the Owner shall, at its option, be entitled to take all steps necessary to vacate and/or discharge the lien, and all costs and expenses incurred by the Owner in so doing (including, without limitation, legal fees on a full indemnity basis, disbursements, the cost of any security to vacate the lien and any payment which may ultimately be made out of or pursuant to security posted to vacate the lien) shall be for the account of the Contractor, and the Owner may deduct such amounts

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from amounts otherwise due or owing to the Contractor. If the Owner vacates the lien, it shall be entitled to retain all amounts it would be required to retain pursuant to the Payment Legislation if the lien had not been vacated.

5.8.4 Without limiting any of the foregoing, the Contractor shall indemnify the Owner for all costs (including, without limitation, legal fees on a full indemnity basis) it may occur in connection with the claim for lien or subsequent lawsuit brought in connection with the lien, or in connection with any other claim or lawsuit brought against the Owner by any person that provided services or materials to the Place of Work which constituted a part of the Work.

5.8.5 This GC 5.8 does not apply to construction liens claimed by the Contractor.”

SC.30 GC 6.1 OWNER'S RIGHT TO MAKE CHANGES

1. In paragraph 6.1.1.2 **add** “or a Change Directive” after “Change Order”

2. **Add** new paragraphs 6.1.3 to 6.1.8 as follows:

“6.1.3 The value of a change shall be determined in one or more of the following methods: (a) by estimate and acceptance in a lump sum; (b) by unit prices set out in the Contract or subsequently agreed upon; (c) by cost and a fixed or percentage fee.

6.1.4 Where changes in the Work are paid for under method (b) of paragraph 6.1.3, the value of changes is based on the net difference in quantities with the appropriate unit rate applied.

6.1.5 Where changes in the Work are to be paid under method (c) of paragraph 6.1.3, the cost to the Owner shall be the actual cost of credits and where additional work is required, the cost to the Owner shall be the actual cost plus a percentage covering overhead and profit, after all credits included in the change have been deducted. Wherein changes in the Work are to be paid under method (c) of paragraph 6.1.3, an allowance covering overhead and profit shall be calculated as follows:

.1 on Work performed by the Contractor’s own forces, 10 per cent;
and

.2 on Work performed by Subcontractors or Suppliers, five per cent.

6.1.6 If any change in the Work is made by which the amount of Work to be done is decreased, or if the whole or any portion of the Work is dispensed with, the Owner shall, subject to paragraph 6.1.3, not be liable to the Contractor for any costs or damages whatsoever including, without limitation, any indirect, consequential or special damages, such as loss of profits, loss of opportunity or loss of productivity.

6.1.7 A Change Order shall be a final determination or adjustment in the Contract Time and Contract Price. There shall be no adjustments to the

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Contract Time or Contract Price or compensation or payment of any kind whatsoever (including, without limitation, claims for loss of productivity) based on the aggregate number, scope or value of changes in the Work whether resulting from Change Order or Change Directive.

- 6.1.8 It is the express intention of the parties that any claims by the Contractor for a change in the Contract Price and/or Contract Time shall be barred unless there has been strict compliance with the requirements of all of PART 6 - CHANGES IN THE WORK and the Contractor has notified the Owner and Consultant, within the earlier of: (i) ten (10) Working Days of any event or circumstance of which Contractor has knowledge which provides the Contractor with a change in the Contract Price and/or Contract Time pursuant to the terms and conditions of the Contract, or (ii) such other period of time expressly allowed for by the Contract. Such notice from the Contractor shall include without limitation, sufficient and adequate information and documentation to allow the Consultant and the Owner to properly consider the claim of the Contractor (including, without limitation, the cause of the change in the Contract Time, a description of the impact on the change in the Contract Time will have on the critical path of the Construction Schedule and a description of the portions of the Work affected thereby and a breakdown of the change in the Contract Price, together with all pertinent details and all other backup information and documents). The Contractor has an ongoing obligation to augment the information and documents described in this paragraph as it becomes available. No course of conduct or dealing between the parties, no express or implied acceptance of alterations or additions to the Work, and no claims that the Owner has been unjustly enriched by any alteration or addition to the Work, whether in fact there is any such unjust enrichment or not, shall be the basis of a claim for additional payment under this Contract or a claim for any extension of the Contract Time."

SC.31 GC 6.3 CHANGE DIRECTIVE

1. **Delete** paragraph 6.3.2 and **replace** it with "INTENTIONALLY DELETED".
2. **Delete** paragraph 6.3.3 and **replace** it with "INTENTIONALLY DELETED".
3. In paragraphs 6.3.7.3 and 6.3.7.4, **delete** everything after "hand tools".
4. **Add** the following to the end of paragraph 6.3.7.6: ", provided however that the costs included in such amounts shall be limited to the actual costs of the items described in this paragraph 6.3.7 changing 'Contractor' to 'Subcontractor' as necessary".
5. In paragraph 6.3.7.7 **add** "reasonable" before "travel".
6. At the end of paragraph 6.3.7, **add** the following:
"All other costs attributable to the change in the Work including the costs of all administrative or supervisory personnel are included in overhead and profit calculated in accordance with the provisions of paragraph 6.1.5 of GC 6.1 - OWNER'S RIGHT TO MAKE CHANGES".

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SC.32 GC 6.4 CONCEALED OR UNKNOWN CONDITIONS

1. In paragraph 6.4.1.1 and paragraph 6.4.1.2 **add** “or the Reports” after “Contract Documents”.
2. In paragraph 6.4.2 **add** “Having regard to and subject to the liabilities and responsibilities assumed by the Contractor pursuant to GC 3.9 - OPERATIONAL RISK,” at the beginning of the first and second sentences.
3. **Add** the following to the end of paragraph 6.4.4 “or GC 15 - EXCESS SOIL, as applicable.”
4. **Add** new paragraph 6.4.5 as follows:
“6.4.5 Without limiting the generality of any other provision in the Contract Documents, during the performance of the Work, the Contractor shall, as a part of the Contract Price and Work, perform any additional geotechnical and subsurface and other investigations, tests and studies beyond those being provided by the Owner, which a reasonable and prudent contractor would conduct to ascertain the nature and extent of subsurface or otherwise concealed physical conditions at the Place of the Work.”

SC.33 GC 6.5 DELAYS

1. In paragraph 6.5.1 **delete** “performance of the Work” in the first line and **replace** with “performance of a critical path activity on the Construction Schedule” and **delete** “them” in the second line and **replace** with “the Consultant”.
2. In paragraph 6.5.1 **add** the following to the end of the paragraph:
“, provided that the Owner shall not be liable for any other costs or damages whatsoever including, without limitation, any indirect, consequential, or special damages, such as loss of profits, loss of opportunity or loss of productivity resulting from such delay.”
3. **Delete** paragraph 6.5.2 in its entirety and **replace** it with “INTENTIONALLY DELETED”.
4. **Delete** paragraph 6.5.3 in its entirety and **replace** with the following:
“6.5.3 If the Contractor is delayed in the performance of the Work by:
 - .1 labor disputes, strikes, lock-outs affecting the Work or the Project,
 - .2 fire, unusual delay by common carriers or unavoidable casualties,
 - .3 abnormally adverse weather conditions,
 - .4 any cause beyond the Contractor’s control that would make performance of the Work impossible other than one resulting from a default or breach of Contract by the Contractor, or
 - .5 a stop work order issued by a court or other public authority, including but not limited to an order issued as the result of an act”

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or omission of the Contractor or any person or other entity employed or engaged by the Contractor directly or indirectly,

then the Contract Time shall be extended for such reasonable time as the Consultant may recommend in consultation with the Contractor. The extension of time shall not be less than the time lost as the result of the event causing the delay, unless the Contractor agrees to a shorter extension. The Contractor shall not be entitled to payment for costs incurred by such delays unless such delays result from actions by the Owner, Consultant or anyone employed or engaged by them directly or indirectly provided that the Owner shall, in such instance, only be liable for reasonable costs incurred by the Contractor and shall not be liable for any other costs or damages whatsoever including, without limitation, any indirect, consequential, or special damages, such as loss of profits, loss of opportunity or loss of productivity resulting from such delay. Notwithstanding the foregoing, the Contractor shall use its best efforts to minimize the impact of such event upon the performance of the Work and Contract Time.”

5. In paragraph 6.5.4, **add** “and Owner” after “Consultant” and **add** the following to the end:

“Without limiting the generality of the foregoing, the following shall also apply to the event of delay dealt with by paragraphs 6.5.1 or 6.5.3:

- .1 the notice provided by the Contractor as set out in this paragraph 6.5.4 shall include, without limitation, the information and documentation required by paragraph 6.1.8.
- .2 the Contractor shall take all reasonable steps to minimize the impact of the delay event upon the performance of the Work, the Contract Time and the Contract Price, resume performance of all its obligations under the Contract affected by the delay as soon as practicable and use all reasonable endeavors to remedy any failure to perform.

Failure to adhere strictly to these notice provisions shall constitute a waiver and release of any obligation of the Owner to extend the Contract Time as a result of such delay and of any claim by the Contractor for costs as a result of such delay.”

6. **Add** new paragraph 6.5.6 as follows:

“6.5.6 If the Work should be behind schedule for a reason other than as described in paragraphs 6.5.1 or 6.5.3, or if any of the Subcontractors or Suppliers or anyone for whom they are responsible delay the progress of any portion of the Work necessary to complete the Work on schedule, the Contractor shall not be relieved of its obligations under the Contract Documents and shall use all possible and, if necessary, extraordinary measures to bring the Work back on schedule. The Contractor shall exercise all reasonable means within its discretion, such as directing any Subcontractors or Suppliers creating delays to increase their labour

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forces and equipment, to improve the organization and expediting of the Work, or to work overtime as may be necessary. The Contractor shall provide any additional supervision, co-ordination and expediting, including overtime by its own personnel as may be required to achieve this end. The costs and expenses incurred by the use of such measures and overtime shall be borne by the Contractor, the Suppliers and/or the Subcontractors.”

SC.34 GC 7.1 OWNER’S RIGHT TO PERFORM THE WORK, TERMINATE THE CONTRACTOR’S RIGHT TO CONTINUE WITH THE WORK OR TERMINATE THE CONTRACT

1. In paragraph 7.1.1 **add** “or terminate the Contract” after “Work” in the fourth line.
2. In paragraph 7.1.2 **add** “, fails or neglects to maintain the latest Construction Schedule provided pursuant to paragraph 3.4” immediately following the word “properly” in the first line and **delete** “to a substantial degree and if the Consultant has given a written statement to the Owner and the which provides the detail of such neglect to perform the Work properly or such failure to comply with the requirements of the Contract to a substantial degree.”
3. In paragraph 7.1.5 **add** “or terminates the Contract” after “Work” in the first line and **add** “without prejudice to any other right or remedy which is available to the Owner” before “the Owner shall be”.
4. In paragraph 7.1.5.2 **delete** “until a final certificate for payment is issued”.
5. In paragraph 7.1.5.3 **delete** “; however, if such costs of finishing the Work is less than the unpaid balance of the Contract Price, the Owner shall pay the Contractor the difference”.
6. **Add** paragraphs 7.1.7 to 7.1.11 as follows:
 - “7.1.7 Notwithstanding any other provision in the Contract Documents, the Contract may be terminated by the Owner without cause. Any such termination shall be effected by delivery to the Contractor of a notice of termination, specifying the date upon which such termination becomes effective. The Owner’s entitlement to so terminate the Contract shall be absolute and unconditional and exercisable by the Owner in its sole and absolute discretion.
 - 7.1.8 In the event of any termination by the Owner pursuant to paragraph 7.1.7, the Contractor shall only be entitled to payment of the following amounts:
 - .1 that portion of the Contract Price relating to Work performed prior to the termination date, as certified by the Consultant; plus
 - .2 Subcontractor and sub-subcontractor cancellation costs (which costs shall not include loss of profit claims) reasonably incurred by the Contractor as the result of such termination; provided the Contractor has substantiated such costs to the Owner’s reasonable satisfaction and after the Owner has reviewed the details thereof; plus

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- .3 subject in all cases to the Owner being informed of all details relating thereto and the prior written approval of the Owner being obtained (which approval may not be unreasonably withheld), reasonable demobilization costs defined to include equipment and office dismantling, transportation to Contractor's storage facility, lease or rental cancellation costs, transportation of the Contractor's employees to their home offices, provided each such demobilization cost shall be reasonable and substantiated (to the Owner's reasonable satisfaction) by the Contractor.
- 7.1.9 Except as described in paragraph 7.1.8, the Contractor shall not be entitled to any additional reimbursement on account of any such termination including, without limitation, indirect, special, consequential or other damages, including, without limitation, loss of profits, loss of opportunity or loss of productivity, notwithstanding any other provision of the Contract Documents.
- 7.1.10 The terms of the Contract, which expressly or by their nature are intended to survive the termination or discharge of the Contract, shall survive such termination or discharge including, without limitation, GC 12.3 - WARRANTY.
- 7.1.11 Upon a termination, the Owner may publish a notice of termination in the form and manner prescribed in the Payment Legislation. For greater certainty, a termination in accordance with this GC 7.1 will be effective whether or not a notice of termination is published."

SC.35 GC 7.2 CONTRACTOR'S RIGHT TO SUSPEND THE WORK OR TERMINATE THE CONTRACT

1. In paragraph 7.2.2 **delete** "20" and **replace** with "60".
2. In paragraph 7.2.3 **add** "and instructing the Owner to correct the default in the five (5) Working Days immediately following the receipt of such Notice in Writing" after "contractual obligations".
3. **Delete** paragraph 7.2.3.1 in its entirety and **replace** with "7.2.3.1 INTENTIONALLY DELETED".
4. In paragraph 7.2.3.2 **add** "subject to the other terms and conditions of the Contract," before "the Consultant".
5. In paragraph 7.2.3.4 **delete** "except for GC 5.1 FINANCING INFORMATION REQUIRED OF THE OWNER".
6. **Delete** paragraph 7.2.4. in its entirety, **renumber** paragraph 7.2.5 as paragraph 7.2.6 and **add** the following new paragraph 7.2.4 and new paragraph 7.2.5:

"7.2.4 If the default cannot be corrected in the 5 Working Days specified, the Owner shall be in compliance with the Contractor's instructions if the Owner:

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- .1 commences the correction of the default within the specified time;
and
 - .2 provides the Contractor with an acceptable schedule for such
correction, and
 - .3 corrects the default in accordance with such schedule.
- 7.2.5 If the Owner fails to correct the default in the time specified or subsequently agreed upon, without prejudice to any other right or remedy the Contractor may have, the Contractor may suspend the Work for not more than 90 days or terminate the Contract.”

SC.36 GC 8.1 AUTHORITY OF THE CONSULTANT

1. **Delete** paragraph 8.1.1 and **replace** with the following:

“8.1.1 All differences between the parties to the Contract as to the interpretation, application or administration of the Contract or any failure to agree where agreement between the parties is called for, herein collectively called disputes, shall be referred to the Consultant in the first instance. A dispute which is not resolved by the findings of the Consultant shall only be settled in accordance with the requirements of Part 8 of the General Conditions – DISPUTE RESOLUTIONS except if the Owner and the Contractor both agree, in a duly executed agreement in writing otherwise pursuant to paragraph 8.3.9.”
2. **Delete** paragraph 8.1.2 and paragraph 8.1.3 in their entirety and **replace** with the following:

“8.1.2 If a dispute is not resolved promptly, or the Owner and the Contractor cannot agree where agreement is required, the Consultant shall give such written instructions as in the Consultant's opinion are necessary for the proper performance of the Work and to prevent delays pending settlement of the dispute. The parties shall act immediately according to such instructions, it being understood that by so doing neither party will jeopardize any claim the party may have. If it is subsequently determined that such instructions were in error or at variance with the Contract Documents, the Owner shall pay the Contractor the costs incurred by the Contractor in carrying out such instructions which the Contractor was required to do beyond what the Contract Documents correctly understood and interpreted would have required, including costs resulting from interruption of the Work.”

SC.37 GC 8.2 ADJUDICATION

1. **Add** new paragraph 8.2.2 and 8.2.3, as follows:

“8.2.2 If the Contractor issues a notice of adjudication to the Owner, it will include with such notice a description of the reasons for its dispute that includes a reference to the applicable application for payment and Proper Invoice, all Notices in Writing demanding payment, authority for the claim

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under the Contract (including copies of any applicable Change Order, Change Directive or written approval of any change).

- 8.2.3 The parties acknowledge and agree that the adjudication of a payment dispute in accordance with the Payment Legislation will not pause, withdraw, discontinue, or prejudice any mediation, arbitration, or court proceeding that relates to the same matter and that was commenced prior to the delivery of a notice of adjudication under the Payment Legislation unless the parties otherwise agree in writing.”

SC.38 GC 8.3 NEGOTIATION, MEDIATION AND ARBITRATION

1. In paragraph 8.3.1 **delete** “Rules of Mediation and Arbitration of Construction Industry Disputes’ in effect at the time of bid closing” and **replace** with “Rules of Mediation and Arbitration, as applicable”.
2. In paragraph 8.3.1.2 **delete** “either party by Notice in Writing requests” and **replace** with “both parties agree”.
3. In paragraph 8.3.4 **delete** “Rules of Mediation of Construction Disputes as provided in CCDC 40 in effect at the time of bid closing” and **replace** with “Rules of Mediation and Arbitration, as applicable”.
4. In paragraph 8.3.6 **delete** “rules for mediation as provided in CCDC 40 in effect at the time of bid closing” and **replace** with “Rules of Mediation and Arbitration, as applicable”.
5. **Add** a new paragraph 8.3.9 as follows:
“8.3.9 This GC 8.3 – NEGOTIATION, MEDIATION AND ARBITRATION, the parties acknowledge that they may, by mutual agreement in writing, agree to refer a particular dispute directly to court.”

SC.39 GC 9.1 PROTECTION OF WORK AND PROPERTY

1. In paragraph 9.1.1 and paragraph 9.1.3, **delete** “property adjacent to the Place of the Work” and **replace** with “property adjacent to, in the vicinity of or proximate to the Place of the Work”.
2. **Delete** paragraph 9.1.1.1 in its entirety and **replace** with “9.1.1.1 INTENTIONALLY DELETED”
3. **Delete** paragraphs 9.1.4.1 and 9.1.4.2 in their entirety.

SC.40 GC 9.2 TOXIC AND HAZARDOUS SUBSTANCES

1. **Add** new paragraphs 9.2.10 to 9.2.14 as follows:
“9.2.10 Neither the Contractor nor anyone for whom it is responsible shall bring on to the Place of the Work any toxic or hazardous substances and materials except as needed in order to perform the Work. If such toxic or hazardous substances or materials are required, storage in quantities sufficient to allow work to proceed for fourteen (14) calendar days only shall be permitted. All such toxic and hazardous materials and substances shall be handled and disposed of only in accordance with all

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Laws that are applicable at the Place of the Work. Without limiting the generality of any other provision in the Contract, the Contractor shall promptly provide the Owner with Material Safety Data Sheets for such toxic or hazardous substances or materials.

- 9.2.11 The Contractor shall indemnify and hold harmless the Owner and Consultant and their respective officers, directors, agents and employees, independent contractors from and against any and all liabilities, costs, expenses, and claims resulting from bodily injury, including death, harm or damage to the environment, and damage to property of any person, corporation or other entity, that arises from the use by the Contractor or anyone for whom the Contractor is responsible of any toxic or hazardous substances or materials at the Place of the Work.
- 9.2.12 The Contractor shall be familiar with, and comply with, the workplace hazardous materials information system. The Contractor shall ensure that all employees and Subcontractors and anyone for whom they are responsible who work with or in proximity to hazardous material fully understand all potential hazards and have been thoroughly trained to deal with any emergencies. Without limiting the generality of the foregoing, all employees and Subcontractors and anyone for whom they are responsible shall be able to:
- a) Recognize and understand the labelling on hazardous materials; and
 - b) Understand material safety data sheets and are knowledgeable on how to safely use, store, handle and dispose of hazardous materials.
- 9.2.13 The Contractor shall ensure all material safety data sheets pertinent to the completion of the Work are at the Place of the Work.
- 9.2.14 For the purposes of GC 9.2 - Toxic and Hazardous Substances, the definition of Hazardous Material shall exclude Excess Soil.”

SC.41 GC 9.4 CONSTRUCTION SAFETY

1. **Add** the following as a new paragraph 9.4.6:

“9.4.6 Without restricting the generality of the foregoing, the Contractor acknowledges that the Contractor is the “constructor” and the “employer” within the meaning of the *Occupational Health and Safety Act* (Ontario) and the Contractor undertakes to carry out the duties, obligations and responsibilities of the constructor and the employer with respect to the Project. For clarity, the Contractor, in fulfilling the role of “constructor” and “employer”, shall have the right to remove the Other Entities from the Place of the Work should they not comply with the Contractor’s safety program and safety instructions. Without restricting the generality of any other term or condition in the Contract, the Contractor shall indemnify and hold harmless the Owner from any liability for claims, damages or

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penalties, including reasonable legal fees to defend any offences, arising from the Contractor's failure to comply with the duties, responsibilities and obligations of the constructor and the employer under the *Occupational Health and Safety Act* (Ontario)."

- 9.4.7 The Contractor acknowledges that the Owner may retain the services of a safety consultant (the "**Safety Consultant**") to serve as the "constructor" for the Project. Notwithstanding any provision to the contrary in this Contract, including paragraphs 9.4.1 and 9.4.4, any Special Provisions, and provisions in Division 1 of the Specifications relating to occupational health and safety, in the event that the Owner advises the Contractor that the Owner has retained a Safety Consultant, the Safety Consultant shall be responsible for fulfilling the role of the "constructor", and the Contractor agrees to comply, and to cause all Subcontractors and Suppliers to comply, with all instructions received from the Safety Consultant."

GC 10.1 TAXES AND DUTIES

1. **Delete** GC 10.1 TAXES AND DUTIES in its entirety and **replace** with the following:

"GC 10.1 TAXES AND DUTIES

- 10.1.1 The Contract Price shall include all taxes, tariffs and customs duties in effect at the time of the bid closing except for Value Added Taxes payable by the Owner to the Contractor as stipulated in Article A-4 of the Agreement - CONTRACT PRICE.
- 10.1.2 Any increase or decrease in costs to the Contractor due to changes in such included taxes, tariffs and duties after the time of the bid closing shall increase or decrease the Contract Price accordingly.
- 10.1.3 The Contractor shall provide a detailed breakdown of additional taxes, tariffs and duties in a form satisfactory to the Owner. Profit and overhead shall not be included in the increase or decrease in costs incurred by the Contractor due to changes in the aforementioned taxes, tariffs and duties.
- 10.1.4 Where an exemption or recovery of government sales taxes, tariffs, customs duties or excise taxes is applicable to the Contract, the parties agree to cooperate with each other to obtain such exemptions. Refunds that are properly due to the Owner and have been recovered by the Contractor shall be promptly refunded to the Owner. In addition, any reduction or elimination of taxes, tariffs or customs duties that take effect after the date of bid closing resulting in savings to the Contractor shall be due to the Owner in the form of a credit to the Contract Price."

SC.42 GC 10.2 LAWS, NOTICES, PERMITS, AND FEES

1. **Delete** paragraph 10.2.2 in its entirety and **replace** with the following:

"10.2.2. Without limiting the generality of any other provision in the Contract, the Contractor shall obtain and pay for, at its sole expense and cost, all permits, development approvals, licenses,

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certificates, charges, refundable deposits, and approvals including, without limitation, building permit, site plan approval, water and sanitary sewer permits, water and sewer connection charges, site alteration permits, curb cut and road cut permits, sign permits, hydro approvals, and occupancy permit necessary for the performance of the Work and the use and occupation of the Work by the Owner in accordance with the Contract Documents, the cost of which shall all be included in the Contract Price.”

2. **Delete** paragraph 10.2.3 in its entirety and **replace** with the following:
“10.2.3. The Contractor shall comply, and shall require its employees, agents, Subcontractors, Suppliers and anyone for whom they are responsible to comply, with all laws, ordinances, guidelines, standards, permits, statutes, by-laws, rules, regulations, or codes, and, subject to 9.4, all of the Owner’s policies and procedures which are or become in force and are applicable to the performance of the Work including, without limitation, all those relating to the preservation of the public health, occupational health and safety and to construction safety.”
3. In paragraph 10.2.5 **delete** “The Contractor” and **replace** with “Subject to paragraphs 1.1.3 and 1.1.4, the Contractor”.
4. **Delete** paragraph 10.2.6 in its entirety and **replace** with the following:
“10.2.6. If the Contractor fails to notify the Owner and the Consultant in writing, fails to obtain direction as required in paragraph 10.2.5, and/or performs work that it knows or ought to have known that contravenes any laws, ordinances, guidelines, standards, permits, statutes, by-laws, rules, regulations, or codes, the Contractor shall be responsible for and shall correct the violations thereof, and shall bear the costs, expenses, and damages attributable to the failure to comply with the provisions of such laws, ordinances, guidelines, standards, permits, statutes, by-laws, rules, regulations, or codes.”
5. **Add** new paragraph 10.2.8 as follows:
“10.2.8. Without limiting the generality of any other provision in the Contract Documents, the Contractor shall cause all certificates to be furnished that are required or given by the appropriate governmental or quasi-governmental Authorities as evidence that the Work as installed conforms with the laws and regulations of Authorities Having Jurisdiction, including, without limitation, certificates of compliance for the Owner’s occupancy or partial occupancy. The certificates are to be final certificates giving complete clearance of the Work, in the event that such governmental or quasi-governmental Authorities furnish such certificates.”

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SC.43 GC 10.3 PATENT FEES

1. In paragraph 10.3.1 **add** “indemnify and” before “hold the” in the second line.
2. In paragraph 10.3.2 **add** “by the Owner” after “supplied to the Contractor.”

SC.44 GC 11.1 INSURANCE

1. **Delete** GC 11.1 INSURANCE in its entirety and **replace** with the following:

“GC 11.1 INSURANCE

11.1.1 Without restricting the generality of GC 13.1 - INDEMNIFICATION, the Contractor shall provide, maintain and pay for the following insurance coverage's:

1. Commercial General Liability insurance shall be with limits of not less than \$5,000,000 per occurrence with an annual aggregate limit of not less than \$5,000,000 within any policy year. The policy shall be maintained until the expiration of the Warranty Period.

The insurance shall be in the name of the Contractor, include the Owner and the Regional Municipality of Peel as an additional insured(s), and include bodily injury including death, personal injury, property damage including loss of use thereof, contractual liability, non-owned automobile liability, owner's and contractor's protective, products and completed operations, employer's liability, contingent employer's liability with coverage including the operations and activities of the Contractor and those for whom the Contractor is in law responsible. The policy shall contain cross liability and severability of interest clauses.

The insurance coverage shall not be less than the insurance provided by IBC Form 2100 or its equivalent replacement (including an extension for a standard provincial or territorial form of non-owned automobile liability policy), provided that IBC form 2100 shall include coverage with respect to sudden and accidental pollution acceptable to the Owner, and IBC Form 2320.

The policy will include but is not limited to the liability of the insureds arising out of their general supervision, if any, or such operations with respect to safety or otherwise, or arising out of the ownership or control of the premises on which such operations are performed.

Liability coverage shall be maintained for completed operations hazards for four (4) years following the expiration of the Warranty Period.

To achieve the desired limit, umbrella or excess liability insurance may be used.

All policies of insurance shall be primary and shall not act as co-insurance or as excess coverage to any policies obtained by the Owner for its sole protection.

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Prior to commencement of the Work and upon the placement, renewal, amendment or extension of all or any part of the insurance, the Contractor shall promptly provide the Owner with a certified true copy of the policy(ies) by an authorized representative of the insurer together with copies of any amending endorsements or a Certificate of Insurance on the Owner's form evidencing compliance with the policy requirements and endorsed to provide the Owner with not less than 30 days' notice in writing in advance of any cancellation, change or amendment restricting coverage.

2. Automobile insurance in respect of vehicles that are required by law to be insured under an Automobile Insurance Policy, shall have limits of not less than \$2,000,000, inclusive per accident or occurrence for bodily injury, death and damage to property, covering all licensed vehicles owned or leased by the Contractor, and endorsed to provide the Owner with not less than 30 days' notice in writing in advance of any cancellation, change or amendment restricting coverage. The policy shall be maintained until the expiration of the Warranty Period. Where the policy has been issued pursuant to a government-operated automobile insurance system, the Contractor shall provide the Owner with confirmation of automobile insurance coverage for all automobiles registered in the name of the Contractor.
3. All Risk property insurance shall have limits of not less than the sum of 1.1 times the Contract Price with a deductible not exceeding \$100,000. The insurance coverage shall not be less than the insurance provided by IBC Forms 4042 and 4047 (including flood and earthquake endorsements) or their equivalent replacement and include coverage for boiler & machinery testing and commissioning, property in transit and off-site coverage with limits acceptable to the Owner. Subject to satisfactory proof of financial capability by the Contractor, the Owner may agree to increase the deductible amounts.

The policy shall include the Owner as a loss payee and waive subrogation against the Owner. The coverage shall be maintained continuously from the commencement of the Work until the date of fifteen (15) calendar days after Ready-for-Takeover and the Contractor's insurance provider has confirmed with the Owner that the Owner added the Project's infrastructure to the Owner's Property insurance policy.

The insurance policy shall name the Owner, Contractor, Subcontractors, Consultant and Subconsultants as their respective interests may appear and be endorsed to provide the Owner with not less than 30 days' notice in writing in advance of cancellation, change or amendment restricting coverage.

4. Boiler and Machinery insurance shall have limits of not less than the replacement value of the insurable objects (boilers and equipment forming part of the permanent installation). The insurance coverage shall not be less than the insurance provided by a comprehensive Boiler and

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Machinery policy. The policy shall include the Owner as a loss payee and waive subrogation against the Owner and shall be endorsed to provide the Owner with not less than 30 days' notice in writing in advance of cancellation, change or amendment restricting coverage.

The coverage shall be maintained continuously from the commencement of use or operation of the boiler and machinery objects insured by the policy and until fifteen (15) calendar days after the date of Ready-for-Takeover and the Contractor's insurance provider has confirmed with the Owner that the Owner added the Project's insurable objects (boilers and equipment permanently installed) to the Owner's Boiler and Machinery insurance policy.

5. All Risks Contractors' Equipment Insurance covering construction machinery and equipment used by the Contractor for the performance of the Work shall be in a form acceptable to the Owner and shall not allow subrogation of claims by the insurer against the Owner or any and all other parties engaged in the Project. The policies shall be endorsed to provide the Owner with not less than 30 days' notice in writing in advance of cancellation, change, or amendment restricting coverage.

7. Standard Exclusions

- 7.1 In addition to the broad form property exclusions identified in IBC 4042 (1995) and 4047 (2000), the Contractor is not required to provide the following insurance coverages:

Cyber Risk
Terrorism

- 11.1.2 Prior to commencement of the Work and upon the placement, renewal, amendment, or extension of all or any part of the insurance, the Contractor shall promptly provide the Owner with confirmation of coverage and, if required, a certified true copy of the policies certified by an authorized representative of the insurer together with copies of any amending endorsements applicable to the Work or Certificate of Insurance on the Owner's form evidencing compliance with the policy requirements and endorsed to provide the Owner with not less than 30 days' notice in writing in advance of any cancellation, change or amendment restricting coverage.

- 11.1.3 The Contractor shall pay all deductibles and damage or loss under a deductible for all required insurance policies, save the All Risk property and boiler and machinery policies' deductibles.

The Owner shall pay the All Risk property and boiler and machinery policies' deductibles unless the Contractor or Subcontractors are responsible for having caused, by act or omission, the loss or damage, in which instance the Contractor shall pay the loss, damage or deductible.

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- 11.1.4 The All Risk property and boiler and machinery policies shall provide that, in the case of a loss or damage, payment shall be made to the Owner and the Contractor as their respective interests may appear.

In the event of loss or damage:

- .1 the Contractor shall act on behalf of the Owner for the purpose of adjusting the amount of such loss or damage payment with the insurers, subject to the Contractor keeping the Owner and Consultant informed as to the progress of the claim adjustment and the Contractor and Owner being in agreement thereto. When the extent of the loss or damage is determined, the Contractor shall proceed to restore the Work. Loss or damage shall not affect the rights and obligations of either party under the Contract except that the Contractor shall be entitled to such reasonable extension of Contract Time relative to the extent of the loss or damage as the Consultant may recommend in consultation with the Contractor;
- .2 the Contractor shall be entitled to receive from the Owner, in addition to the amount due under the Contract, the amount which the Owner's interest in restoration of the Work has been appraised, such amount to be paid as the restoration of the Work proceeds in accordance with the progress payment provisions. In addition, the Contractor shall be entitled to receive from the payments made by the insurer the amount of the Contractor's interest in the restoration of the Work; and
- .3 to the Work arising from the work of the Owner, the Owner's own forces or Other Contractors, the Owner shall, in accordance with the Owner's obligations under the provisions relating to construction by the Owner or Other Contractors, pay the Contractor the cost of restoring the Work as the restoration of the Work proceeds and as in accordance with the progress payment provisions.

- 11.1.5 If the Contractor fails to provide or maintain insurance as required by the Contract Documents, then the Owner shall have the right to provide and maintain such insurance and give evidence to the Contractor and the Consultant. The Contractor shall pay the cost thereof to the Owner on demand or the Owner may deduct the cost from the amount which is due or may become due to the Contractor.

- 11.1.6 All required insurance policies shall be issued by insurers licensed to underwrite insurance in the Province of Ontario and shall be at the approval, not unreasonably withheld, of the Owner.

- 11.1.7 If the Owner or the Consultant requests that any adjudicators, other consultants, experts or administrators attend the Place of the Work in order to inspect or review any part of the Work, the Owner or the Consultant shall provide the Contractor with a Notice in Writing of such attendance. The Contractor shall ensure that the Place of the Work is safe for such attendance, inspection or review, and shall accompany such

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persons throughout the attendance to ensure any such attendance, inspection or review is completed in a safe manner.”

SC.45 GC 12.1 READY-FOR-TAKEOVER

1. **Add** a new paragraph 12.1.1.9 as follows:
“.9 any other information or documents which the Owner may request, acting reasonably.”
2. **Delete** GC 12.1.2 in its entirety and **replace** it with “INTENTIONALLY DELETED.”
3. **Delete** GC 12.1.3 and GC 12.1.4 in their entirety and **replace** them with the following:
“12.1.3 When the Contractor considers that the Work has met, and the Contractor has performed, all of the requirements of paragraph 12.1.1, the Contractor shall deliver to the Consultant and to the Owner a comprehensive list of items to be completed or corrected, together with a written application for Ready-for-Takeover for the Consultant and the Owner to review. Failure to include an item on the list does not alter the responsibility of the Contractor to complete the Contract or comply with its obligations under the Contract.

12.1.4 The Consultant shall review the Work to verify the validity of the Contractor’s application for Ready-for-Takeover and will promptly advise the Owner whether the Work has met, and the Contractor has performed, all of the requirements of paragraph 12.1.1. After the Consultant has provided its advice to the Owner, the Owner shall, in its sole discretion, in writing, accept the Contractor’s application for Ready-for-Takeover or reject the Contractor’s application for Ready-for-Takeover, with reasons. If the Owner rejects the Contractor’s application for Ready-for-Takeover, the Contractor shall promptly address the reasons indicated by the Owner for the rejection of the Contractor’s application for Ready-for-Takeover and reapply in accordance with paragraph 12.1.3.”

SC.46 GC 12.2 EARLY OCCUPANCY BY THE OWNER

1. **Delete** GC 12.2 in its entirety and **replace** it with the following:
“12.2.1 Upon the Owner’s request, the Owner shall, at any time or times, have the right of occupying and/or using any part or parts of the Work (including, without limitation, for the purposes of installing and testing fittings and equipment), whether partially performed or entirely complete, or whether completed on schedule or not, before the completion of the Work.

12.2.2 In the event the Owner desires to exercise the privilege of occupancy and/or use of the Work as provided above, the Contractor shall co-operate with the Owner throughout in making available for the Owner’s use such building services as heating, ventilation, cooling, water, lighting and telephone for the space or spaces to be occupied and/or used, and if

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the equipment required to furnish such services is not entirely completed at the time the Owner desires to occupy and/or use the aforesaid space or spaces, the Contractor shall make every reasonable effort to complete same as soon as possible to the extent that the necessary equipment can be put into operation and use and any extra cost beyond that originally required to complete the Work arising from such early occupancy and/or use shall be borne by the Owner.

12.2.3 In the event that the Owner exercises the privilege of occupancy and/or use of the Work as provided above, it agrees to do so, so as not to materially interfere with the respective work of the Contractor, Subcontractors or Suppliers and under the understanding that the Owner will be occupying premises within a construction site which will require compliance with all normal construction site requirements including, without limitation, health and safety requirements.

12.2.4 It shall be understood, however, that the Owner's occupancy and/or use of such space or spaces of the Work shall not constitute the Owner's acceptance of any Work, materials or equipment which are not in accordance with the requirements of the Contract Documents, nor affect the warranty period under the Contract, nor relieve the Contractor from its obligations, duties, responsibilities, and liabilities to complete the Work, nor for responsibility for loss or damage due to or arising out of defects in, or malfunctioning of, any Work, material or equipment, nor from any other unfulfilled duties, liabilities, obligations or responsibilities under the Contract nor from any other duty, liability, obligation or responsibility under the Contract including, without limitation, the Contractor's warranty obligations. If, however, damage results from any act by the Owner, the Owner shall assume its share of the responsibility for such damage."

SC.47 GC 12.3 WARRANTY

1. **Delete** paragraph 12.3.1 in its entirety and **replace** it with the following:
"12.3.1 The Contractor agrees to remedy, at its costs, any defects in materials and workmanship which are identified by the Owner within a period of 24 months (except where otherwise noted for a longer period of time in the Contract Documents) from Ready-for-Takeover, or, if there are Non-Contiguous Improvements, from the date of Ready-for-Takeover for the last such improvement to achieve Ready-for-Takeover (the "**Warranty Period**"). This warranty shall cover labour and material, including, without limitation, the costs of removal and replacement of covering materials. This warranty shall not limit extended warranties on any items of equipment or material called for elsewhere in the specifications or otherwise provided by any manufacturer of such equipment or material."
2. In paragraph 12.3.3 **delete** "one year" and **replace** with "24 months".
3. In paragraph 12.3.4 **delete** "one year" and **replace** with "24 months".
4. **Add** the following to paragraph 12.3.5:

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“The carrying out of the replacement work and making good of defects shall be executed at such times as convenient with the Owner which may entail overtime work on the part of the Contractor. Additional charges for overtime work in this regard must be borne by the Contractor.”

5. **Delete** paragraph 12.3.6 in its entirety and **add** new paragraphs 12.3.6 to 12.3.9:

“12.3.6 Any material or equipment requiring excessive servicing during the Warranty Period (or free maintenance period, if applicable) shall be considered defective and the warranty (or free maintenance period) shall be deemed to take effect from the time that the defect has been corrected so as to cause excessive servicing to terminate.

12.3.7 The final payment certificate shall not relieve the Contractor from its responsibility under this GC 12.3 - WARRANTY.

12.3.8 Following Ready-for-Takeover, and without limiting the Contractor’s warranty under this GC 12.3, the Contractor shall assign to the Owner, to the extent assignable, the benefit of all warranties and guarantees relating to the Work. The assignment shall expressly reserve the right of the Contractor to make any claims under such warranties and guarantees and such assignment shall in no way prejudice any rights of or benefits accruing to the Contractor pursuant to such warranties and guarantees.

12.3.9 The provisions of the GC 12.3 - WARRANTY shall not deprive the Owner of any action, right or remedy otherwise available to the Owner for the Contractor’s failure to fulfill its obligations or responsibilities under the Contract and shall not be construed as a waiver of claims in favour of the Contractor or as a limitation on the time in which the Owner may pursue such other action, right or remedy. The warranties set out in the Contract are not supplemental to and do not limit or preclude the application of any other conditions and warranties, express or implied, by law or trade usage.”

SC.48 GC 12.4 WARRANTY SECURITY HOLDBACK

1. **Add** new paragraph GC 12.4 - WARRANTY SECURITY HOLDBACK as follows:

“GC 12.4 WARRANTY SECURITY HOLDBACK

12.4.1 The Contractor agrees that the Owner may withhold an amount of the payments due by the Owner to the Contractor hereunder as security for the Contractor’s performance of its warranty obligations hereunder (the “**Warranty Holdback**”). The amount of the Warranty Holdback shall be determined based on the contract price in accordance with the following table:

CONTRACT PRICE		VALUE OF WARRANTY HOLDBACK (\$)
FROM (\$)	TO (\$)	
Less than 0.1M		4 per cent of Final Contract Price
0.1 M	0.5 M	4,000 on first 0.1 M + 3.0 per cent on next 0.4M

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0.5 M	1.0 M	16,000 on first 0.5 M + 2.4 per cent on next 0.5M
1.0 M	2.0 M	28,000 on first 1.0 M + 2.2 per cent on next 1.0M
2.0 M	4.0 M	50,000 on first 2.0 M + 2.0 per cent on next 2.0M
4.0 M	6.0 M	90,000 on first 4.0 M + 1.8 per cent on next 2.0M
6.0 M	10.0 M	126,000 on first 6.0M + 1.5 per cent on next 4.0M
Over 10.0 M		186,000 on first 10.0M + 1.0 per cent on balance

For the avoidance of doubt, the Warranty Holdback shall be adjusted from time to time to account for changes to the contract price as a result of approved Change Orders and Change Directives.

12.4.2 In order to fund the Warranty Holdback, the Owner may, at its sole discretion, retain the Warranty Holdback progressively as a percentage of some or all progress payment to the Contractor, or retain a lump sum upon the achievement of Substantial Performance or, if insufficient funds have been retained at the time of Ready-for-Takeover, retain a portion of any remaining payment owing to the Contractor, including any remaining progress payment, final or finishing work payment, or the holdback under the Payment Legislation, if any.

12.4.3 The Owner shall release the Warranty Holdback, less any amount due to the Owner by the Contractor hereunder, at the end of the Warranty Period. Notwithstanding the foregoing:

.1 after the first 12 months of the Warranty Period, the Contractor may apply for a release of 80 per cent of the Warranty Holdback, provided that balance of the Warranty Holdback shall not be below \$5,000 as a result of the release and provided that there are no outstanding deficiencies at the time of the application; and

.2 The Contractor may apply in writing to the Owner at the time of Ready-for-Takeover to substitute for the monies retained as the Warranty Holdback an alternative warranty security of equivalent or greater value comprising:

- (i) one or more irrevocable letters of credit, or
- (ii) another readily negotiable security.

Acceptance of any such alternative shall be at the sole discretion of the Owner.

Following receipt and acceptance of any such alternative security by the Owner, the Consultant shall release to the Contractor the monies previously retained for warranty security purposes.

The Owner may, at its discretion, allow the total Warranty Holdback to be made up in part of monies retained under the Contract and in part of an alternative warranty security as indicated in (a) and (b) above provided that the total value of such parts, as determined by the Owner, shall be not less than the required value as derived from the table set out above.

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Such alternative warranty security or the monies derived therefrom, less any deductions made as provided for in the Contract, shall be released to the Contractor following the issuance by the Consultant of a Warranty Holdback Payment Certificate.”

SC.49 GC 13.1 INDEMNIFICATION

1. **Delete** paragraph 13.1.1 in its entirety and **replace** with the following:

“13.1.1 The Contractor shall indemnify the Owner, the Consultant and their respective officers, council members, chairs, partners, agents, employees, servants, insurers, advisors, consultants, contractors, successors and assigns (collectively the “**Indemnified Parties**”), and save them harmless from and against any and all claims, demands, losses, costs, damages, actions, causes of action, suits or proceedings and all other liabilities, losses and expenses including bodily injury or death to any Person, harm or damage to the environment, or loss or damage to property, court costs, interest, legal fees, adjusting fees and disbursements (collectively “claims”) made against or suffered or incurred by the Indemnified Parties, directly or indirectly and which arise from or are connected with:

.1 any failure or alleged failure by the Contractor (or any Subcontractor, Supplier or anyone for whom the Contractor and/or its Subcontractors and Suppliers may be responsible) to comply with the Contract Documents including any applicable Laws or Regulations, including provincial workers’ compensation laws or regulations;

.2 any infringement or alleged infringement by the Contractor (or any Subcontractor, Supplier or anyone for whom the Contractor and/or its Subcontractors and Suppliers may be responsible) of any intellectual property right including without limitation any misuse, passing off or infringement or alleged infringement of trade-marks;

.3 any defective or potentially hazardous goods used by the Contractor (or any Subcontractor, Supplier or anyone for whom the Contractor and/or its Subcontractors and Suppliers may be responsible);

.4 any form of theft, fraud, or illegal activity by the Contractor (or any Subcontractor, Supplier or anyone for whom the Contractor and/or its Subcontractors and Suppliers may be responsible) or any of their respective agents, directors, officers, or employees;

.5 any willful act, omission or negligence of the Contractor (or any Subcontractor, Supplier or anyone for whom the Contractor and/or its Subcontractors, and Suppliers may be responsible), or any of their respective agents, directors, officers, servants, contractors or employees;

.6 any negligence by the Contractor (or any Subcontractor, Supplier or anyone for whom the Contractor and/or its Subcontractors, and Suppliers may be responsible) directly or indirectly arising or contributing to or

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alleged to arise out of the Contractor's performance of or the failure to perform the Work, or out of the conditions of the work, the job site, adjoining land, driveways, streets or alleys used in connection with the performance of the Work under this Contract;

.7 any negligence, errors or omissions, or monies owing to the Owner for claims payable under this indemnity due to failure of any insurance required of Subcontractors or Suppliers thereof as retained by Contractor, but shall not include any claims arising solely from the active negligence of the party asking to be defended, indemnified or saved harmless; and

.8 any failure or alleged failure by the Contractor to comply with the requirements of GC 15 - EXCESS SOIL (including, the Excess Soil Legislation and the duties and responsibilities of the Project Leader) and any orders, fines, penalties, charges, alleged offences, actions, demands, directions, or proceedings imposed or commenced by a governmental authority or third party, as applicable, and legal fees and disbursements to defend same, arising out of or attributable to the Excess Soil Legislation including, the Owner's failure or alleged failure to comply with any duties or responsibilities it may be found to have, or alleged to have, as a Project Leader."

2. **Delete** paragraphs 13.1.2 and 13.1.3 in their entirety and **replace** each with "INTENTIONALLY DELETED."

SC.50 GC 13.2 WAIVER OF CLAIMS

1. **Delete** paragraph 13.2 in its entirety and **replace** with the following:

"GC 13.2 WAIVER OF CLAIMS

13.2.1 Subject to any rights or remedies provided by the Payment Legislation, as of the date of the final certificate for payment, the Contractor expressly waives and releases the Owner from all claims against the Owner including, without limitation, those that might arise from the negligence or breach of contract by the Owner except:

- .1 those made in writing in compliance with the Contract Documents prior to the Contractor's application for final payment and still unsettled; and
- .2 those arising from the provisions of GC 9.2 - TOXIC AND HAZARDOUS SUBSTANCES AND MATERIALS or GC 10.3 PATENT FEES."

SC.51 MISCELLANEOUS

1. **Add** new PART 14 MISCELLANEOUS as follows:

"PART 14 MISCELLANEOUS

GC 14.1 REVIEW BY OWNER AND REVIEW BY CONSULTANT

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14.1.1 Neither the Owner's and/or Consultant's receipt, review or approval of any documents or the Work nor the failure of the Owner and/or Consultant's to provide comment shall limit, waive or diminish the Contractor's obligations, responsibilities, duties or liabilities under the Contract. The review or approval by the Owner and/or Consultant is intended only to ascertain that the document or the performance of the Contractor's duties, liabilities, responsibilities or obligations under the Contract including, without limitation, the Work generally meets the intention of the Contract and is not an assurance or confirmation of the adequacy, quality, fitness, suitability or correctness of the Contractor's obligations, responsibilities, duties and liabilities under the Contract including, without limitation, the Work, for which the Contractor is solely responsible in accordance with the Contract.

GC 14.2 CARE AND SKILL

14.2.1 The Contractor acknowledges, confirms, represents and warrants to the Owner that:

- .1 in performing the Work, it shall at all times exercise the degree of care and skill that ought to be exercised by contractors in performing work of the nature contemplated herein; and
- .2 it has the necessary experience, skill and expertise required to enable it to fulfill its obligations, duties, liabilities, and responsibilities herein.

GC 14.3 NON-INTERFERENCE

14.3.1 The Contractor acknowledges that the Place of the Work is and will continue to be occupied by the Owner and the Owner will continue to carry out its normal operations at the Place of the Work. The Contractor agrees to perform the Work in the least intrusive manner possible. Without limiting the generality of the foregoing, the Contractor acknowledges and agrees that it shall carry out its duties, responsibilities, and obligations under the Contract in such a manner so as not to disrupt or interfere with any of the Owner's or any third party's existing facilities and ongoing operations or activities or other operations located in the area adjacent to, in the vicinity of or proximate to the Place of the Work.

GC 14.4 LIQUIDATED DAMAGES

14.4.1 It is expressly agreed by the parties that if the date of Substantial Performance of the Work occurs later than the Substantial Performance Date, the Contractor shall pay to the Owner liquidated damages calculated as \$300.00 for each calendar day that Substantial Performance of the Work extends beyond the Substantial Performance Date. It is expressly agreed that it is difficult to calculate the damages which would result from the Contractor's failure to attain Substantial Performance of the Work by the Substantial Performance Date, and the parties agree that the liquidated damages are not intended to be penalties

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but rather represent the parties' best estimate of damages resulting from the delay.

14.4.2 In the event that the Consultant reasonably determines that the Contractor is not progressing in accordance with the Construction Schedule with the result that the Contractor will not achieve Substantial Performance of the Work by the Substantial Performance Date, the Owner will commence to hold back amounts from payments due to the Contractor totaling an amount sufficient to cover the Consultant's estimate of liquidated damages that may be payable pursuant to paragraph 14.5.1. In the event that the Owner hold backs more than is owed pursuant to paragraph 14.5.1, it shall forthwith pay such excess to the Contractor.

14.4.3 The Owner may deduct any amount due under this paragraph from any monies that may be due or payable to the Contractor on any account whatsoever. The liquidated damages payable under this paragraph are in addition to and without prejudice to any other remedy, action or other right that may be available to the Owner.

GC 14.5 DAMAGES AND MUTUAL RESPONSIBILITY

14.5.1 If either party to the Contract should suffer damage in any manner because of any wrongful act or neglect of the other party or of anyone for whom the other party is responsible in law, then that party shall be reimbursed by the other party for such damage. The reimbursing party shall be subrogated to the rights of the other party in respect of such wrongful act or neglect if it be that of a third party.

14.5.2 Claims for damage under paragraph 14.5.1 shall be made in writing to the party liable within reasonable time after the first observance of such damage and if undisputed shall be confirmed by Change Order. Disputed claims shall be resolved as set out in Part 8 for the General Conditions - DISPUTE RESOLUTION.

14.5.3 If the Contractor has caused damage to the work of one of the Other Entities, the Contractor agrees upon due notice to settle with such Other Entity by negotiation or arbitration. If the Other Entity makes a claim against the Owner on account of damage alleged to have been so sustained, the Owner shall notify the Contractor and may require the Contractor to defend the action at the Contractor's expense. The Contractor shall satisfy a final order or judgement against the Owner and pay the costs incurred by the Owner arising from such action.

13.5.4 If the Contractor becomes liable to pay or satisfy a final order, judgment, or award against the Owner, then the Contractor, upon undertaking to indemnify the Owner against any and all liability for costs, shall have the right to appeal in the name of the Owner such final order or judgment to any and all courts of competent jurisdiction.

GC 14.6 RIGHT OF SET-OFF

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- 14.6.1 The Owner has the right to set-off against the balance due or to become due to the Contractor under the Contract, any reasonable and substantiated amounts due or to become due from the Contractor to the Owner under the Contract.

GC 14.7 SOFTWARE

- 14.7.1 Without limiting the generality of any other provision in the Contract, the Contractor, as a part of the Work, shall supply and install all software required by the Contract Documents or included with any systems required by the Contract Documents ("Software"). The Contractor shall grant or obtain a perpetual, irrevocable non-exclusive royalty-free license to use the Software sufficient for the Owner's purposes."

GC 14.8 SEVERABILITY

- 14.8.1 If, in any jurisdiction, any provision of the Contract or its application to any party or circumstance is restricted, prohibited or unenforceable, the provision shall, as to that jurisdiction, be ineffective only to the extent of the restriction, prohibition or unenforceability without: (i) invalidating the remaining provisions of the Contract; (ii) affecting the validity or enforceability of such provision in any other jurisdiction; or (iii) affecting its application to other parties or circumstances."

GC 14.9 CONTRACT SECURITY

- 14.9.1 The Contractor shall, prior to commencement of the Work or within the specified time, provide to the Owner any contract security specified in the Contract Documents.
- 14.9.2 If the Contract Documents require surety bonds to be provided, such bonds shall be issued by a duly licensed surety company authorized to transact the business of suretyship in the province or territory of the Place of the Work and shall be maintained in good standing until the fulfillment of the Contract. The form of such bonds shall be substantially in the forms required under the Payment Legislation and with a surety company deemed acceptable by the Owner.
- 14.9.3 The Contractor shall, as part of the Contract Price, provide a Performance Bond with a face value of 50 per cent of the Contract Price and a Labour and Material Payment Bond with a face value of 50 per cent of the Contract Price, substantially in the form required under the Payment Legislation.

The Labour and Material Payment Bond shall be in effect for a period of not less than one year (1) after the date on which the Contractor last performed Work on the Contract, including Work performed under any warranty or guarantees provided in the Contract.

The Performance Bond and a Labour and Material Payment Bond must be submitted by the Contractor in a digital format that meets the criteria of

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the Surety Association of Canada (SAC) and as stated in the Contract Documents.

GC 14.10 CLEAN UP

- 14.10 Without limiting GC 12.2, the Owner shall have the right to back charge cleaning to the Contractor if it is not done within 24 hours of written notice to clean and the Owner shall have the right to back charge cost of damage to the Place of the Work caused by Contractor's, Subcontractor's or Supplier's transportation in and out of the Place of the Work if not repaired within 5 Working Days of written notice to repair or before final payment, whichever is earlier."

SC.52 EXCESS SOIL

1. **Add** new PART 15 EXCESS SOIL, as follows:

"PART 15 EXCESS SOIL

GC 15 EXCESS SOIL

- 15.1 The Contractor shall determine if the Excess Soil Legislation applies to the Work or the Project and shall provide the Owner with immediate written notice of such determination. For clarity, the Contractor acknowledges and agrees that this is an ongoing obligation of the Contractor during the performance of the Work.
- 15.2 If the Excess Soil Legislation applies to the Work or the Project, the Contractor, at the Contractor's cost and expense, shall:
- i) be solely responsible for compliance with the requirements of the Excess Soil Legislation during the performance of the Work; and
 - ii) perform the Work in accordance with, and subject to, the Excess Soil Legislation and the Contract Documents
- 15.3 Without restricting the generality of any other provision in the Contract Documents:
- i) for the duration of the Project, until Contract Completion, in respect of the Work, the Project and the Place of the Work, the Contractor shall carry out, and fulfill, the duties and responsibilities of the Project Leader in accordance with the requirements of the Excess Soil Legislation;
 - ii) the Contractor's responsibilities under paragraph 10.2.2 include procuring, and, as a part of the Contract Price, paying for, all permits, approvals, registrations and disposal fees, costs and expenses required by the Excess Soil Legislation; and
 - iii) the documents at the Place of the Work referred to in paragraph 3.9.1 include, all documents evidencing that the Work complies with the Excess Soil Legislation and such other documents as required by the Excess Soil Legislation.

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- 15.4 For clarity, this GC 15 - EXCESS SOIL is applicable to Excess Soil, even when such Excess Soil differs materially from those indicated in the Contract Documents or is of a nature which differs materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents.
- 15.5 This GC 15 EXCESS SOIL does not limit, and is in addition to, any other responsibility or liability of the Contractor in connection with the Contract.”

END OF SUPPLEMENTARY CONDITIONS

AGREEMENT TO BOND

We, the undersigned, hereby agree to become bound as Surety for

In a Performance Bond totalling **50 per cent** of the Contract amount and a Labour and Material Payment Bond totalling **50 per cent** of the Contract amount, substantially in the forms required under the *Construction Act* and conforming to the Instruments of Contract attached hereto, for the full and due performance of the Works shown as described herein, if the Tender for

is accepted by the Owner.

It is a condition of the Contract that if the above-mentioned Tender is accepted by the Agency, application for a Performance Bond and a Labour and Material Payment Bond, each in the amount of **50 per cent** of the Contract amount, and each substantially in the forms prescribed by the *Construction Act*, must be completed with the undersigned within 10 days of acceptance of Tender related thereto, otherwise this Agreement shall be null and void.

Dated this _____ day of _____, _____.

Name of Bonding Company

Signature of Authorized Person Signing
for Bonding Company (Company Seal)

Position

**GENERAL CONTRACTING SERVICES FOR INTERIOR RENOVATIONS
AT 180 DERRY ROAD E., MISSISSAUGA FOR PEEL REGIONAL POLICE**

1. GENERAL

1.1 Related Requirements

- 1.1.1 Section 00 21 13 Instructions to Bidders
- 1.1.2 Section 00 31 00 Available Information

1.2 Work Covered By Contract Documents

- 1.2.1 The Work shall be performed and completed in accordance with the following documents:
 - 1.2.1.1 Drawings and general provisions of Contract, including the Agreement, General Conditions, and Supplementary Conditions
 - 1.2.1.2 Technical Specifications
 - 1.2.1.3 Compliance with the requirements of the various specifications and standards referred to in the Contract Drawings and Specifications

1.3 Contract Method

- 1.3.1 Construct Work under stipulated price contract.
- 1.3.2 Employ subcontractors, suppliers by Base building for:
None
- 1.3.3 Relations and responsibilities between Contractor and subcontractors assigned by Owner are as defined in Conditions of Contract. Assigned Subcontractors must, in addition:
 - 1.3.3.1 Purchase and maintain liability insurance to protect Contractor from claims for not less than limits of liability which Contractor is required to provide to Consultant.

1.4 Work By Others

- 1.4.1 Co-operate with other Contractors in carrying out their respective works and carry out instructions from Consultant.
- 1.4.2 Co-ordinate work with that of other Contractors. If any part of work under this Contract depends for its proper execution or result upon work of another Contractor, report promptly to Consultant, in writing, any defects which may interfere with proper execution of Work.
- 1.4.3 Work of this Project must include provisions for co-ordinating additional related work, identified in Contract Documents, for following principal items.

1.5 Future Work

- 1.5.1 Not Applicable.

**GENERAL CONTRACTING SERVICES FOR INTERIOR RENOVATIONS
AT 180 DERRY ROAD E., MISSISSAUGA FOR PEEL REGIONAL POLICE**

1.6 Contractor Use Of Premises

- 1.6.1 Contractor shall have use of premises for construction operations as indicated on drawings by the contract limits.
- 1.6.2 Co-ordinate use of premises under direction of Consultant.
- 1.6.3 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.
- 1.6.4 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.
- 1.6.5 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Consultant.
- 1.6.6 At completion of operations condition of existing work: equal to or better than that which existed before new work started.

1.7 Owner Occupancy

- 1.7.1 Owner will occupy premises during entire construction period for execution of normal operations.
- 1.7.2 Co-operate with Owner in scheduling operations to minimize conflict and to facilitate Owner usage. Schedule all noisy and disruptive activities after hours i.e. after 5:00pm or weekends.
- 1.7.3 All scheduled work to be completed after hours to be included in pricing and at no additional cost to Owner.

1.8 Partial Owner Occupancy

- 1.8.1 Schedule and substantially complete designated portions of Work for Owner's occupancy prior to Substantial Performance of entire Work.
- 1.8.2 Owner will occupy designated areas.
- 1.8.3 Execute Certificate of Substantial Performance for each designated portion of Work prior to Owner occupancy. Contractor shall allow:
 - 1.8.3.1 Access for Owner personnel.
 - 1.8.3.2 Use of parking facilities.
 - 1.8.3.3 Operation of HVAC and electrical systems.
- 1.8.4 On occupancy, Owner will provide for occupied areas:
 - 1.8.4.1 Operation of HVAC and electrical systems.
 - 1.8.4.2 Maintenance.
 - 1.8.4.3 Security.
- 1.8.5 Execute Partial Interim Certificate of Completion for each designated portion of Work prior to Owner occupancy. Contractor shall allow:
 - 1.8.5.1 Access for owner personnel
 - 1.8.5.2 Use of parking facilities

**GENERAL CONTRACTING SERVICES FOR INTERIOR RENOVATIONS
AT 180 DERRY ROAD E., MISSISSAUGA FOR PEEL REGIONAL POLICE**

1.8.5.3 Operation of HVAC and electrical systems.

1.9 Owner Furnished Items

1.9.1 Owner Responsibilities:

1.9.1.1 Contractor to work in conjunction with Brigholme Interiors Group on these items:

1.9.1.1.1 Arrange for delivery of shop drawings, product data, samples, manufacturer's instructions, and certificates to Contractor.

1.9.1.1.2 Deliver supplier's bill of materials to Contractor.

1.9.1.1.3 Arrange and pay for delivery to site in accordance with Progress Schedule.

1.9.1.1.4 Inspect deliveries jointly with Contractor.

1.9.1.1.5 Submit claims for transportation damage.

1.9.1.1.6 Arrange for replacement of damaged, defective or missing items.

1.9.1.1.7 Arrange for manufacturer's field services; arrange for and deliver manufacturer's warranties and bonds to Contractor.

1.9.2 Contractor Responsibilities:

1.9.2.1 Designate submittals and delivery date for each product in progress schedule.

1.9.2.2 Review shop drawings, product data, samples, and other submittals. Submit to Consultant notification of observed discrepancies or problems anticipated due to non-conformance with Contract Documents.

1.9.2.3 Receive and unload products at site.

1.9.2.4 Inspect deliveries jointly with Owner; record shortages, and damaged or defective items.

1.9.2.5 Handle products at site, including uncrating and storage.

1.9.2.6 Protect products from damage, and from exposure to elements.

1.9.2.7 Assemble, install, connect, adjust, and finish products.

1.9.2.8 Provide installation inspections required by public authorities.

1.9.2.9 Repair or replace items damaged by Contractor or Subcontractor on site (under his control).

1.9.3 Existing Office Furniture - All existing office furniture to be removed and disposed of shall be done by a specialist company, specializing in furniture removal. Existing office furniture as per APPENDIX G

**GENERAL CONTRACTING SERVICES FOR INTERIOR RENOVATIONS
AT 180 DERRY ROAD E., MISSISSAUGA FOR PEEL REGIONAL POLICE**

1.10 Alterations, Additions Or Repairs To Existing Building

- 1.10.1 Execute work with least possible interference or disturbance to occupants, building operations, and normal use of premises. Arrange with Owner to facilitate execution of work.
- 1.10.2 Use only elevators, existing in building for moving workers and material.
 - 1.10.2.1 Protect walls of passenger elevators, to approval of Owner prior to use.
 - 1.10.2.2 Accept liability for damage, safety of equipment and overloading of existing equipment.

1.11 Existing Services

- 1.11.1 Notify Owner and utility companies of intended interruption of services and obtain required permission.
- 1.11.2 Where Work involves breaking into or connecting to existing services, give Owner 48 hours notice for necessary interruption of mechanical or electrical service throughout course of work. Minimize duration of interruptions. Carry out work at times as directed by governing authorities with minimum disturbance to Owner operations. All scheduled work to be completed after hours to be included in pricing and at no additional cost to Owner.
- 1.11.3 Provide alternative routes for personnel traffic.
- 1.11.4 Establish location and extent of service lines in area of work before starting Work. Notify Consultant of findings.
- 1.11.5 Submit schedule to and obtain approval from Owner for any shut-down or closure of active service or facility including power and communications services. Adhere to approved schedule and provide notice to affected parties.
- 1.11.6 Provide temporary services when directed by Consultant to maintain critical building and Owner systems.
- 1.11.7 Provide adequate bridging over trenches which cross sidewalks or roads to permit normal traffic.
- 1.11.8 Where unknown services are encountered, immediately advise Consultant and confirm findings in writing.
- 1.11.9 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.
- 1.11.10 Record locations of maintained, re-routed and abandoned service lines.
- 1.11.11 Construct barriers in accordance with Section 01 56 00 – Temporary Barriers and Enclosures.

**GENERAL CONTRACTING SERVICES FOR INTERIOR RENOVATIONS
AT 180 DERRY ROAD E., MISSISSAUGA FOR PEEL REGIONAL POLICE**

1.12 Documents Required

1.12.1 Maintain at job site, one copy each document as follows:

1.12.1.1 Contract Drawings.

1.12.1.2 Specifications.

1.12.1.3 Addenda.

1.12.1.4 Reviewed Shop Drawings.

1.12.1.5 List of Outstanding Shop Drawings.

1.12.1.6 Change Orders.

1.12.1.7 Other Modifications to Contract.

1.12.1.8 Field Test Reports.

1.12.1.9 Copy of Approved Work Schedule.

1.12.1.10 Health and Safety Plan and Other Safety Related Documents.

1.12.1.11 Other documents as specified.

2. PRODUCTS

2.1 Not Used

2.1.1 Not used.

3. EXECUTION

3.1 Not Used

3.1.1 Not used.

END OF SECTION

1. **GENERAL**

1.1 **Reference Standards**

- 1.1.1 Canadian Construction Documents Committee (CCDC)
 - 1.1.1.1 CCDC 2-2020, Stipulated Price Contract.
- 1.1.2 Peel Region's Supplementary Conditions

1.2 **Cash Allowances**

- 1.2.1 Refer to CCDC 2, GC 4.1 and Peel Region Supplementary Conditions
- 1.2.2 Purchases from Cash Allowances must be authorized by written instructions issued by Consultant; and the form and method of accounting for costs shall be agreed to by the Consultant and the Contractor before proceeding with the purchase.
- 1.2.3 Cash Allowances will not be subjected to any Contractor mark-up.
- 1.2.4 Harmonized Sales Tax is not included in Cash Allowances
- 1.2.5 Include in Contract Price specified cash allowances.
- 1.2.6 The Contract Price to include the following Cash Allowances:
 - 1.2.6.1 Supply and Installation of Security head end devices (CCTV cameras, Card Reader c/w Electric Strikes for doors including cabling and wiring)
Note: GC to retain Peel Regional Police's Security Vendor of Record for Supply and Installation of above-mentioned Security devices.
Contact:
Tara Bantock
66 Nuggett Court
Brampton, ON
L6T 5A9
tbantock@meteortel.com
Allowance **\$6,000.00**
 - 1.2.6.2 Cabling
Allowance **\$47,000.00**
- 1.2.7 The Contract Price to include Furniture Cash Allowance:
 - 1.2.7.1 Supply of new ULINE tables and workstation benches as listed on ID1. Installation by Client
Allowance **\$6,000.00**
 - 1.2.7.2 Supply and installation of new office furniture and relocation/reconfiguration of existing as noted on drawings ID2, ID3, including furniture delivery, installation and project management under GC Scope as Sub-Trade.

**GENERAL CONTRACTING SERVICES FOR INTERIOR RENOVATIONS
AT 180 DERRY ROAD E., MISSISSAUGA FOR PEEL REGIONAL POLICE**

Design, renderings and final estimate provided by
Brigholme

Contact:

Brigholme Interiors Group

Virginia Abreu

Cell: 416-254-9533

Email: virginia.abreu@brigholme.com

Allowance **\$120,000.00**

2. PRODUCTS

2.1 Not Used

3. EXECUTION

3.1 Not Used

END OF SECTION

1. GENERAL

1.1 Summary

- 1.1.1 Section includes administrative and procedural requirements for substitutions.

1.2 Related Documents

- 1.2.1 Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.3 Related Section

- 1.3.1 Section 01 21 00 – Allowance
1.3.2 Section 01 61 00 – Common Product Requirements

1.4 Action Submittals

- 1.4.1 Substitution Requests: Submit via electronic format, of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Drawing numbers and titles.
- 1.4.1.1 Submit documentation showing compliance with requirements for substitutions and the following, as applicable:
- 1.4.1.1.1 Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
- 1.4.1.1.2 Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
- 1.4.1.1.3 Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
- 1.4.1.1.4 Product Data, including drawings and descriptions of products and fabrication and installation procedures.
- 1.4.1.1.5 Samples, where applicable or requested.

- 1.4.1.1.6 Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated, if applicable.
- 1.4.1.1.7 Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
- 1.4.1.1.8 Cost information, including a proposal of change, if any, in the Contract Sum.
- 1.4.1.1.9 Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
- 1.4.1.1.10 Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
- 1.4.1.1.11 Sample of warranty with side-by-side comparison with that specified.
- 1.4.1.2 Consultant's action: If necessary, Consultant will request additional information or documentation for evaluation within 24 hours of receipt of a request for substitution. Consultant will notify Contractor through Construction Manager of acceptance or rejection of proposed substitution within 48 hours of receipt of request, or 24 hours of receipt of additional information or documentation, whichever is later.
 - 1.4.1.2.1 Forms of Acceptance: Change Order, Change Directive, or Site Instructions for minor changes in the Work.
 - 1.4.1.2.2 Use product specified if Consultant does not issue a decision on use of a proposed substitution within time allocated.

1.5 Quality Assurance Related Section

- 1.5.1 Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials.

1.6 Substitutions

- 1.6.1 Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but no later than 48 hours prior to time required for preparation and review of related submittals.
- 1.6.2 Conditions: Consultant will consider Contractor's request for substitution when the following conditions are satisfied:
- 1.6.2.1 Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - 1.6.2.2 Requested substitution will not adversely affect Contractor's construction schedule.
 - 1.6.2.3 Requested substitution has received necessary approvals of authorities having jurisdiction.
 - 1.6.2.4 Requested substitution is compatible with other portions of the Work.
 - 1.6.2.5 Requested substitution has been coordinated with other portions of the Work.
 - 1.6.2.6 Requested substitution provides specified warranty.
 - 1.6.2.7 If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- 1.6.3 Substitutions for Convenience: Not allowed.

2. PRODUCTS

2.1 Not Used

3. EXECUTION

3.1 Not Used

END OF SECTION

1. GENERAL

1.1 Summary

- 1.1.1 Section includes administrative and procedural requirements for handling and processing Contract modifications. Contractor shall develop and implement a system acceptable to Owner for the preparation, review and processing of Contemplated Change Notice, contingency and allowance expenditure authorizations, Change Orders, and requests for information.

1.2 Related Document

- 1.2.1 Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- 1.2.2 The General Contractor's attention is specifically directed, but not limited, to the following documents for additional requirements:
- 1.2.2.1 General Conditions of Stipulated Price Contract.
- 1.2.2.2 Supplementary General Conditions.

1.3 Related Sections

- 1.3.1 Section 01 25 00 – Substitution Procedures
- 1.3.2 Section 01 33 00 – Submittal Procedures

1.4 Quality Assurance

- 1.4.1 Include within the Contractor's quality assurance program such measures as are needed to assure familiarity of the Contractor's staff and employees with these procedures for processing Change Order data.

1.5 Product Handling

- 1.5.1 Maintain a "Change Order Log" at the job site, accurately reflecting current status of all pertinent data.
- 1.5.2 Make the Log available to the Designer for review at his request.

1.6 Minor Changes In The Work

- 1.6.1 Owner will issue, through the Consultant, a Site Instruction authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time.
- 1.6.2 A Site Instruction from Owner through Consultant will not change any requirement of the Contract Documents. In the event the General Contractor believes that the Site Instruction will cause a change to the requirements of the Contract Documents, the General Contractor shall

within 48 hours give written notice to the Owner stating that the General Contractor believes the Site Instruction will result in a Change Order and the Contractor intends to submit a "Contemplated Change Notice" request. Failure to give such written notice of 48 hours shall waive the General Contractor's right to seek additional time or cost under the requirements of the Contract Documents.

1.7 Owner Initiated Proposed Changes

- 1.7.1 Should the Owner contemplate making a change in the Work that may require adjustment to the Contract Sum or the Contract Time, the Consultant will issue a Contemplated Change Notice to the Contractor. If necessary, the Notice will include supplemental or revised Drawings and Specifications.
- 1.7.1.1 Contemplated Change Notice will be dated and will be numbered in sequence.
- 1.7.1.2 Contemplated Change Notice is not an authorization either to stop work in progress or to execute the proposed change.

1.8 General Contractor Initiated Proposed Changes

- 1.8.1 Should the Contractor discover a discrepancy among Contract Documents, a concealed condition, or other cause for suggesting a change in the Work, a change in the Contract Sum or the Contract Time, they shall notify the Consultant as required by pertinent provisions of the Contract Documents.
- 1.8.2 Upon agreement by the Consultant that there is reasonable cause to consider the Contractor's proposed change, the Consultant will issue a Contemplated Change Notice in accordance with the provisions described in Article 1.7 above.

1.9 Change Order Procedures

- 1.9.1 Within time specified in Contemplated Change Notice or 48 hours, when not otherwise specified, after receipt of the Notice, submit a quotation for cost adjustments to the Contract Sum and the Contract Time necessary to execute the change including the following to the extent applicable, with appropriate supporting documentation:
- 1.9.1.1 Estimated labour costs, including Subcontractor hours and applicable hourly rates based on the accepted schedule of labour rates.
- 1.9.1.2 Estimated Product costs, including Subcontractor quotations, estimated quantities, and unit prices.
- 1.9.1.3 Estimated construction equipment costs.
- 1.9.1.4 Enumeration of all other estimated costs included in the price quotation.

- 1.9.1.5 Estimated credit amounts for labour and Products not required on account of the proposed change.
- 1.9.1.6 Applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
- 1.9.1.7 Allowable mark-ups on changes in the Work will be subject to the following schedule:
 - 1.9.1.7.1 The Contractor on work of his own forces:
 - (1) On Extras: ten (1) percent (%) overhead, five (5) percent (%) profit;
 - (2) On Credits: no mark-up.
 - 1.9.1.7.2 The Contractor on work of the Subcontractors:
 - (1) On Extras: five (5) percent (%) overhead;
 - (2) On Credits: no mark-up.
 - 1.9.1.7.3 Mechanical and Electrical Subcontractors:
 - (1) On Extras: five (5) percent (%) overhead, five (5) percent (%) profit;
 - (2) On Credits: no mark-up
 - 1.9.1.7.4 All other Subcontractors:
 - (1) On Extras: five (5) percent (%) overhead, five (5) percent (%) profit;
 - (2) On Credits: no mark-up.
- 1.9.1.8 Increase or decrease to the Contract Time, if any, for the proposed change, stated in number of days
- 1.9.1.9 Include in the quotation the number of days for which the quotation is valid
- 1.9.1.10 Clearly describe other changes in the Work required by the proposed change, or desirable therewith, if any.
- 1.9.1.11 Submit this response in single copy.
- 1.9.2 The quotation will be evaluated by the Consultant and the Owner and, if accepted by the Owner, the Consultant will prepare a Change Order, for authorization by the Owner and acknowledgement by the Contractor.
 - 1.9.2.1 Change Order will be dated and will be numbered in sequence.
 - 1.9.2.2 Change Order will describe the change or changes, will refer to the Contemplated Change Notice involved.

1.10 Change Directive

- 1.10.1 If the Owner required the Contractor to proceed with a change in the Work prior to the Owner and the Contractor agreeing upon the

corresponding adjustment in Contract Price or Contract Time, the Owner, through the Consultant, shall issue a Change Directive

1.10.2 A Change Directive

1.10.2.1 Instructs Contractor to proceed with a change in the Work, for potential inclusion in a Change Order.

1.10.2.2 Contains a complete description of change in the Work.

1.10.2.3 Designates method to be followed to determine change in the Contract Sum or the Contract Time.

1.10.3 Documentation:

1.10.3.1 Contractor to maintain detailed records on a time and material basis of work required by the Change Directive.

1.10.3.2 After completion of change, submit to the Owner through the Consultant, a quotation for cost adjustments to the Contract Sum and the Contract Time necessary to execute the change in accordance with Article 1.9.1 above.

1.11 Requests For Information (RFI)

1.11.1 In the event that the General Contractor or any Subcontractor involved in the Work, determines that some portion of the drawings, specifications, or other contract documents requires clarification or interpretation by the Owner, the General Contractor shall submit a Request for Information (RFI) in writing to the Owner.

1.11.2 RFIs may only be submitted by the General Contractor and shall only be submitted on the RFI Form as required by the Owner. Any RFIs submitted, not on the official RFI Form will be returned to the Contractor unreviewed.

1.11.3 In the RFI, the General Contractor shall clearly and concisely set forth the issue for which clarification or interpretation is sought and why a response is needed from the Owner.

1.11.4 In the RFI, the General Contractor shall set forth an interpretation or understanding of the requirement along with reasons why such an understanding was reached.

1.11.5 The Owner will review all RFI's to determine whether they are valid RFI's. If it is determined that the document is not a valid RFI, it will be returned to the General Contractor, unreviewed, with an explanation why it was

1.11.6 An RFI Response shall be issued within 48 hours of receipt of the request from the General Contractor unless the Owner determines that a longer time is necessary to provide an adequate response. If a longer time is determined necessary by the Owner, the Owner will, within 24 hours of receipt of the request, notify the General Contractor of the anticipated response time.

- 1.11.7 An RFI Response from Owner through Consultant will not change any requirement of the Contract Documents. In the event the General Contractor believes that the RFI Response will cause a change to the requirements of the Contract Documents, the General Contractor shall within 48 hours give written notice to the Owner stating that the General Contractor believes the RFI Response will result in a Change Order and the Contractor intends to submit a "Contemplated Change Notice" request. Failure to give such written notice of 48 hours shall waive the General Contractor's right to seek additional time or cost under the requirements of the Contract Documents.

2. PRODUCTS

2.1 Not Used

- 2.1.1 Not Used.

3. EXECUTION

3.1 Not Used

- 3.1.1 Not Used.

END OF SECTION

1. GENERAL

1.1 Reference Standards

- 1.1.1 Owner/Contractor Agreement.
- 1.1.2 Canadian Construction Documents Committee (CCDC)
 - 1.1.2.1 CCDC 2-2020, Stipulated Price Contract.

1.2 Applications For Progress Payment

- 1.2.1 Refer to CCDC 2, GC 5.2 and Peel Region Supplementary Conditions

1.3 Schedule Of Values

- 1.3.1 Refer to CCDC 2, GC 5.2 and Peel Region Supplementary Conditions

1.4 Preparing Schedule Of Unit Price Table Items

- 1.4.1 Submit separate schedule of unit price items of Work requested in Bid form.
- 1.4.2 Make form of submittal parallel to Schedule of Values, with each line item identified same as line item in Schedule of Values. Include in unit prices only:
 - 1.4.2.1 Cost of material.
 - 1.4.2.2 Delivery and unloading at site.
 - 1.4.2.3 Sales taxes.
 - 1.4.2.4 Installation, overhead and profit.
- 1.4.3 Ensure unit prices multiplied by quantities given equal material cost of that item in Schedule of Values.

1.5 Progress Payment

1.6 Refer to CCDC 2, GC 5.3

- 1.6.1 Refer to CCDC 2, GC 5.4 and Peel Region Supplementary Conditions

1.7 Substantial Performance Of Work

1.8 Refer to CCDC 2, GC 5.4

- 1.8.1 Refer to CCDC 2, GC 5.4 and Peel Region Supplementary Conditions
- 1.8.2 Prepare and submit to Consultant comprehensive list of items to be completed or corrected and apply for a review by Consultant to establish Substantial Performance of Work or substantial performance of designated portion of Work when Work is substantially performed if permitted by lien legislation applicable to Place of Work designated portion which Owner agrees to accept separately is substantially performed. Failure to include items on list does not alter responsibility to complete Contract.

- 1.8.3 Immediately following issuance of certificate of Substantial Performance of Work, in consultation with Consultant, establish reasonable date for finishing Work.

1.9 Payment Of Holdback Upon Substantial Performance Of Work

- 1.9.1 Refer to CCDC 2, GC 5.4 and Peel Region Supplementary Conditions

1.10 Progressive Release Of Holdback

- 1.10.1 Refer to CCDC 2, GC 5.4 and Peel Region Supplementary Conditions

1.11 Final Payment

- 1.11.1 Refer to CCDC 2, GC 5.5 and Peel Region Supplementary Conditions

1.12 Sample Invoice Format

- 1.12.1 The following illustrates a sample format to follow when submitting progress invoices. Values shown are for illustration purposes only. Provide actual project name and numbers, and name of Owner's representative on completed invoices. Variations from this format are acceptable where all of the information indicated below is provided.
- 1.12.2 Invoice shall bear be printed on the Contractor's corporate letterhead or otherwise bear the Contractor's name, address, telephone number, HST registration numbers.

Project Coordinator

Name

Position Title

City Title

Address

City, ON POSTAL CODE

Project: City Title

Project Title

Consultant Project No. #####

Date

Application for Payment No. XX

Original Contract Price (excluding HST)	\$100,000.00	
Change Orders	\$2,000.00	
Current Value of Change Directives Certified	\$0.00	
Value of Contract Price on last day of payment period (1+2+3)	\$102,000.00	\$102,000.00
Value Added Taxes @ 13%		\$15,650.00
Total amount payable for the construction of the Work including Value Added Taxes (4+5)		\$117,650.00

Payment Application Summary

Total Value Requested to be Certified	\$45,000.00	
Statutory Holdback @ 10%	4,500.00	
Warranty Holdback as per SC.51- GC 12.3	1,440.00	
Holdback Released	\$0.00	
Current Holdback (8+ 8a -9)	\$5,940.00	
Amount (value of Work performed and products delivered to the Place of Work less holdback retained (7-10)	\$39,060.00	\$39,060.00
Less amount from previous certificate for payment	\$15,000.00	
Amount of Contract Price invoiced for current period (11-12)	\$24,060.00	\$24,060.00
Value Added Taxes @ 13%	\$3,127.80	\$3,127.80
Total Amount Invoiced including Value Added Taxes (13+14)		\$27,187.80

Invoice to be signed by Contractor

Name, credentials and position of person signing

attachments (WSIB, summary of change orders, contract price

breakdown, substantiation for cash allowance expenditures, Statutory

Declaration, etc.) Contractor's HST Registration No.: _____

2. PRODUCTS

2.1 Not Used

2.1.1 Not Used.

3. EXECUTION

3.1 Not Used

3.1.1 Not Used.

END OF SECTION

1. GENERAL

1.1 Administrative

- 1.1.1 Schedule and administer project meetings throughout the progress of the work at the call of Consultant.
- 1.1.2 Prepare agenda for meetings.
- 1.1.3 Distribute written notice of each meeting four days in advance of meeting date to Consultant.
- 1.1.4 Provide physical space and make arrangements for meetings.
- 1.1.5 Preside at meetings.
- 1.1.6 Record the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.
- 1.1.7 Reproduce and distribute copies of minutes within three days after meetings and transmit to meeting participants affected parties not in attendance.
- 1.1.8 Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

1.2 Preconstruction Meeting

- 1.2.1 Within 3 days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.
- 1.2.2 Consultant, Contractor, major Subcontractors will be in attendance.
- 1.2.3 Establish time and location of meeting and notify parties concerned minimum 3 days before meeting.
- 1.2.4 Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.
- 1.2.5 Agenda to include:
 - 1.2.5.1 Appointment of official representative of participants in the Work.
 - 1.2.5.2 Schedule of Work: in accordance with [Section [01 32 16.06- Construction Progress Schedule - Critical Path Method (CPM)]] [Section [01 32 16.07- Construction Progress Schedules - Bar (GANTT) Chart]] .
 - 1.2.5.3 Schedule of submission of shop drawings, samples, colour chips. Submit submittals in accordance with Section [01 33 00- Submittal Procedures] .
 - 1.2.5.4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section [01 52 00- Construction Facilities] .

- 1.2.5.5 Delivery schedule of specified equipment.
- 1.2.5.6 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
- 1.2.5.7 Owner provided products.
- 1.2.5.8 Record drawings in accordance with Section [01 33 00- Submittal Procedures] .
- 1.2.5.9 Maintenance manuals in accordance with Section [01 78 00- Closeout Submittals] .
- 1.2.5.10 Take-over procedures, acceptance, warranties in accordance with Section [01 78 00- Closeout Submittals] .
- 1.2.5.11 Monthly progress claims, administrative procedures, photographs, hold backs.
- 1.2.5.12 Appointment of inspection and testing agencies or firms. Insurances, transcript of policies.

1.3 Progress Meetings

- 1.3.1 During course of Work and weekly.
- 1.3.2 Contractor, major Subcontractors involved in Work, Comley van Brussel Design and Engineers when required are to be in attendance.
- 1.3.3 Notify parties minimum of two 2 business days in advance.
- 1.3.4 Record minutes of meetings and circulate to all attending parties and affected parties not in attendance within two business days.
- 1.3.5 Agenda to include the following:
 - 1.3.5.1 Review, approval of minutes of previous meeting.
 - 1.3.5.2 Review of Work progress since previous meeting.
 - 1.3.5.3 Field observations, problems, conflicts.
 - 1.3.5.4 Problems which impede construction schedule.
 - 1.3.5.5 Review of off-site fabrication delivery schedules.
 - 1.3.5.6 Corrective measures and procedures to regain projected schedule.
 - 1.3.5.7 Revision to construction schedule.
 - 1.3.5.8 Progress schedule, during succeeding work period.
 - 1.3.5.9 Review submittal schedules: expedite as required.
 - 1.3.5.10 Maintenance of quality standards.
 - 1.3.5.11 Review proposed changes for affect on construction schedule and on completion date.
 - 1.3.5.12 Other business.

2. **PRODUCTS**

2.1 **Not Used**

2.1.1 Not Used.

3. **EXECUTION**

3.1 **Not Used**

3.1.1 Not Used.

END OF SECTION

1. GENERAL

1.1 Related Requirements

- 1.1.1 Applicable in general, individual work-related Sections not listed.

1.2 Reference Standards

- 1.2.1 Not Applicable.

1.3 Administrative

- 1.3.1 Submit to Consultant submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- 1.3.2 Do not proceed with Work affected by submittal until review is complete.
- 1.3.3 Present shop drawings, product data, samples and mock-ups in SI Metric units.
- 1.3.4 Where items or information is not produced in SI Metric units converted values are acceptable.
- 1.3.5 Review submittals prior to submission to Consultant. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
- 1.3.6 Notify Consultant, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- 1.3.7 Verify field measurements and affected adjacent Work are co-ordinated.
- 1.3.8 Contractor's responsibility for errors and omissions in submission is not relieved by Consultant's review of submittals.
- 1.3.9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Consultant review.
- 1.3.10 Keep one reviewed copy of each submission on site.

1.4 Shop Drawings And Product Data

- 1.4.1 Refer to CCDC 2, GC 3.8 and Peel Region Supplementary Conditions.

- 1.4.2 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- 1.4.3 Submit drawings stamped and signed by professional engineer registered or licensed in Ontario, Canada.
- 1.4.4 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
- 1.4.5 Allow two working days for review of each submission by Consultants.
- 1.4.6 Adjustments made on shop drawings by Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Consultant prior to proceeding with Work.
- 1.4.7 Make changes in shop drawings as Consultant may require, consistent with Contract Documents. When resubmitting, notify Consultant in writing of revisions other than those requested.
- 1.4.8 Accompany submissions with transmittal letter, in [duplicate], containing:
 - 1.4.8.1 Date
 - 1.4.8.2 Project title and number
 - 1.4.8.3 Contractor's name and address.
 - 1.4.8.4 Identification and quantity of each shop drawing, product data and sample
 - 1.4.8.5 Other pertinent data
- 1.4.9 Submissions include:
 - 1.4.9.1 Date and revision dates
 - 1.4.9.2 Project title and number
 - 1.4.9.3 Name and address of:
 - 1.4.9.3.1 Subcontractor
 - 1.4.9.3.2 Supplier
 - 1.4.9.3.3 Manufacturer
 - 1.4.9.4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
 - 1.4.9.5 Details of appropriate portions of Work as applicable:
 - 1.4.9.5.1 Fabrication.

- 1.4.9.5.2 Layout, showing dimensions, including identified field dimensions, and clearances.
 - 1.4.9.5.3 Setting or erection details.
 - 1.4.9.5.4 Capacities.
 - 1.4.9.5.5 Performance characteristics.
 - 1.4.9.5.6 Standards.
 - 1.4.9.5.7 Operating weight.
 - 1.4.9.5.8 Wiring diagrams.
 - 1.4.9.5.9 Single line and schematic diagrams.
 - 1.4.9.5.10 Relationship to adjacent work.
- 1.4.10 After Consultant's review, distribute copies.
- 1.4.11 Submit electronic copy of shop drawings for each requirement requested in specification Sections and as Consultant may reasonably request.
- 1.4.12 Submit electronic copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Consultant where shop drawings will not be prepared due to standardized manufacture of product.
- 1.4.13 Submit electronic copies of test reports for requirements requested in specification Sections and as requested by Consultant.
 - 1.4.13.1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.
 - 1.4.13.2 Testing must have been within one [1] month of date of contract award for project.
- 1.4.14 Submit electronic copies of certificates for requirements requested in specification Sections and as requested by Consultant.
 - 1.4.14.1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.
 - 1.4.14.2 Certificates must be dated after award of project contract complete with project name.
- 1.4.15 Submit electronic copies of manufacturers instructions for requirements requested in specification Sections and as requested by Consultant.
 - 1.4.15.1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.

- 1.4.16 Submit electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Consultant.
- 1.4.17 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- 1.4.18 Submit electronic copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Consultant.
- 1.4.19 Delete information not applicable to project.
- 1.4.20 Supplement standard information to provide details applicable to project.
- 1.4.21 If upon review by Consultant, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.
- 1.4.22 The review of shop drawings by Comley van Brussel Design is for sole purpose of ascertaining conformance with general concept.
 - 1.4.22.1 This review shall not mean that CvBD approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.
 - 1.4.22.2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

1.5 Samples

- 1.5.1 Submit for review samples in duplicate as requested in respective specification Sections. Label samples with origin and intended use.
- 1.5.2 Deliver samples prepaid to Consultant's business address.
- 1.5.3 Notify Consultant in writing, at time of submission of deviations in samples from requirements of Contract Documents.
- 1.5.4 Where colour, pattern or texture is criterion, submit full range of samples.

- 1.5.5 Adjustments made on samples by Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Consultant prior to proceeding with Work.
- 1.5.6 Make changes in samples which Consultant may require, consistent with Contract Documents.
- 1.5.7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

1.6 Mock-Ups

- 1.6.1 Erect mock-ups in accordance with 01 45 00- Quality Control.

1.7 Photographic Documentation

- 1.7.1 Project identification: name and number of project and date of exposure indicated.
- 1.7.2 Number of viewpoints: two [2] locations.
 - 1.7.2.1 Viewpoints and their location as determined by [Consultant].
- 1.7.3 Frequency of photographic documentation: as directed by [Consultant].
 - 1.7.3.1 Upon completion of: work related to framing and services before concealment, of Work, as directed by [Consultant].

1.8 Certificates And Transcripts

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

2. PRODUCTS

2.1 Not Used

- 2.1.1 Not Used.

3. EXECUTION

- 3.1.1 Not Used
- 3.1.2 Not Used.

END OF SECTION

1. GENERAL

1.1 Reference Standards

- 1.1.1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations
- 1.1.2 Province of Ontario
 - 1.1.2.1 Occupational Health and Safety Act and Regulations for Construction Projects, R.S.O. [1990, c.0.1, as amended and O. Reg. 213/91 as amended] - Updated [2005] .

1.2 Action And Informational Submittals

- 1.2.1 Submit in accordance with Section [01 33 00- Submittal Procedures] .
- 1.2.2 Submit site-specific Health and Safety Plan: Within [7] days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
 - 1.2.2.1 Results of site specific safety hazard assessment.
 - 1.2.2.2 Results of safety and health risk or hazard analysis for site tasks and operation [found in work plan] .
- 1.2.3 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
- 1.2.4 Submit copies of incident and accident reports.
- 1.2.5 Submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section [01 47 15- Sustainable Requirements: Construction] and Section [02 81 01- Hazardous Materials].
- 1.2.6 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

1.3 FILING OF NOTICE

- 1.3.1 File Notice of Project with [Territorial] [Provincial] authorities prior to beginning of Work.
- 1.3.2 Contractor shall be responsible and assume the Principal Contractor role for each work zone location and not the entire complex. Contractor shall provide a written acknowledgement of this responsibility with 3 weeks of contract award. Contractor to submit written acknowledgement to CSST along with Ouverture de Chantier Notice.
- 1.3.3 Contractor shall agree to install proper site separation and identification in order to maintain time and space at all times throughout life of project.

1.4 Safety Assessment

- 1.4.1 Perform site specific safety hazard assessment related to project.

1.5 Meetings

- 1.5.1 Schedule and administer Health and Safety meeting with Consultant and Owner prior to commencement of Work.

1.6 Regulatory Requirements

- 1.6.1 Do Work in accordance with Section [01 41 00- Regulatory Requirements] .

1.7 General Requirements

- 1.7.1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.
- 1.7.2 Consultant and/or Owner may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

1.8 Responsibility

- 1.8.1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
- 1.8.2 Contractor will be responsible and assume the role Constructor as described in the Ontario Occupational Health and Safety Act and Regulations for Construction Projects.
- 1.8.3 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

1.9 Compliance Requirements

- 1.9.1 Comply with Ontario Occupational Health and Safety Act, R.S.O. 1990, c. 0.1 and Ontario Regulations for Construction Projects, O. Reg. 213/91.

1.10 Unforeseen Hazards

- 1.10.1 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts

and Regulations of Ontario having jurisdiction and advise Consultant and Owner verbally and in writing.

1.11 Health And Safety Co-Ordinator

1.11.1 Employ and assign to Work, competent and authorized representative as Health and Safety Co-ordinator. Health and Safety Co-ordinator must:

- 1.11.1.1 Have site-related working experience specific to activities associated.
- 1.11.1.2 Have working knowledge of occupational safety and health regulations.
- 1.11.1.3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.
- 1.11.1.4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.
- 1.11.1.5 Be on site during execution of Work and report directly to and be under direction of Owner

1.12 Posting Of Documents

1.12.1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Ontario having jurisdiction, and in consultation with Consultant and Owner.

1.13 Correction Of Non-Compliance

- 1.13.1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Consultant and Owner.
- 1.13.2 Provide Consultant and Owner with written report of action taken to correct non-compliance of health and safety issues identified.
- 1.13.3 Owner may stop Work if non-compliance of health and safety regulations is not corrected.

1.14 Powder Actuated Devices

- 1.14.1 15.1.1 Use powder actuated devices only after receipt of written permission from Owner .

1.15 Work Stoppage

- 1.15.1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.

2. PRODUCTS

2.1 Not Used

- 2.1.1 Not used.

3. EXECUTION

3.1 Not Used

- 3.1.1 Not used.

END OF SECTION

1. **GENERAL**

1.1 **Reference Standards**

- 1.1.1 Canadian Construction Documents Committee (CCDC)
- 1.1.2 CCDC 2-2020 Stipulated Price Contract.
- 1.1.3 U.S. Environmental Protection Agency (EPA)/Office of Water
 - 1.1.3.1 EPA 832/R-92-005-[92] , Storm Water Management for Construction Activities, Chapter 3.
 - 1.1.3.2 EPA General Construction Permit (GCP) [2012] .

1.2 **Definitions**

- 1.2.1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humans; or degrade environment aesthetically, culturally and/or historically.
- 1.2.2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction.

1.3 **Action And Informational Submittals**

- 1.3.1 Submit in accordance with Section [01 33 00- Submittal Procedures] .
- 1.3.2 Product Data:
 - 1.3.2.1 Submit manufacturer's instructions, printed product literature and data sheets.
 - 1.3.2.2 Submit [2] copies of WHMIS MSDS in accordance with Section [01 35 43- Environmental Procedures] [01 35 29.06- Health and Safety Requirements] .
- 1.3.3 Before commencing construction activities or delivery of materials to site, submit Environmental Protection Plan for review [and approval] by Consultant.
- 1.3.4 Environmental Protection Plan must include comprehensive overview of known or potential environmental issues to be addressed during construction.
- 1.3.5 Address topics at level of detail commensurate with environmental issue and required construction task[s] .
- 1.3.6 Include in Environmental Protection Plan:
 - 1.3.6.1 Name[s] of person[s] responsible for ensuring adherence to Environmental Protection Plan.
 - 1.3.6.2 Name[s] and qualifications of person[s] responsible for manifesting hazardous waste to be removed from site.

- 1.3.6.3 Name[s] and qualifications of person[s] responsible for training site personnel.
- 1.3.6.4 Descriptions of environmental protection personnel training program.
- 1.3.6.5 Erosion and sediment control plan identifying type and location of erosion and sediment controls to be provided including monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations [and EPA 832/R-92-005, Chapter 3] .
- 1.3.6.6 Drawings indicating locations of proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on site.
- 1.3.6.7 Traffic Control Plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather.
 - 1.3.6.7.1 Plans to include measures to minimize amount of material transported onto paved public roads by vehicles or runoff.
- 1.3.6.8 Work area plan showing proposed activity in each portion of area and identifying areas of limited use or non-use.
 - 1.3.6.8.1 Plan to include measures for marking limits of use areas and methods for protection of features to be preserved within authorized work areas.
- 1.3.6.9 Spill Control Plan to include procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.
- 1.3.6.10 Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.
- 1.3.6.11 Air pollution control plan detailing provisions to assure that dust, debris, materials, and trash, are contained on project site.
- 1.3.6.12 Contaminant Prevention Plan identifying potentially hazardous substances to be used on job site; intended actions to prevent introduction of such materials into air, water, or ground; and detailing provisions for compliance with Federal, Provincial, and Municipal laws and regulations for storage and handling of these materials.
- 1.3.6.13 Waste Water Management Plan identifying methods and procedures for management [] discharge of waste waters which are directly derived from construction

activities, such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines.

1.3.6.14 Historical, archaeological, cultural resources biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands.

1.3.6.15 Pesticide treatment plan to be included and updated, as required.

1.4 Fires

1.4.1 Fires and burning of rubbish on site [is not permitted]

1.5 DRAINAGE

1.5.1 Develop and submit erosion and Sediment Control Plan (ESC) identifying type and location of erosion and sediment controls provided. Plan to include monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations[, EPA 832/R-92-005, Chapter 3] [US EPA General Construction Permit] .

1.5.2 Storm Water Pollution Prevention Plan (SWPPP) to be substituted for erosion and sediment control plan.

1.5.3 Provide temporary drainage and pumping required to keep excavations and site free from water.

1.5.4 Ensure pumped water into waterways, sewer or drainage systems is free of suspended materials.

1.5.5 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

1.6 Site Clearing And Plant Protection

1.6.1 Protect trees and plants on site and adjacent properties as indicated.

1.6.2 Protect trees and shrubs adjacent to construction work, storage areas and trucking lanes, and encase with protective wood framework from grade level to height of [2] m minimum.

1.6.3 Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage.

1.6.3.1 Avoid unnecessary traffic, dumping and storage of materials over root zones.

1.6.4 Minimize stripping of topsoil and vegetation.

1.6.5 Restrict tree removal to areas [indicated] designated by Consultant.

1.7 Work Adjacent To Waterways

- 1.7.1 Construction equipment to be operated on land only.
- 1.7.2 Use waterway beds for borrow material only after written receipt of approval from Consultant.
- 1.7.3 Waterways to be kept free of excavated fill, waste material and debris.
- 1.7.4 Design and construct temporary crossings to minimize erosion to waterways.
- 1.7.5 Do not skid logs or construction materials across waterways.
- 1.7.6 Avoid indicated spawning beds when constructing temporary crossings of waterways.
- 1.7.7 Blasting is allowed only above water and [100] m minimum from indicated spawning beds.

1.8 Pollution Control

- 1.8.1 Maintain temporary erosion and pollution control features installed under this Contract.
- 1.8.2 Control emissions from equipment and plant in accordance with local authorities' emission requirements.
- 1.8.3 Prevent sandblasting and other extraneous materials from contaminating air and waterways beyond application area.
 - 1.8.3.1 Provide temporary enclosures where indicated by Consultant.
- 1.8.4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

1.9 Historical/Archaeological Control

- 1.9.1 Provide historical, archaeological, cultural resources, biological resources, and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands known to be on project site: and identifies procedures to be followed if historical archaeological, cultural resources, biological resources and wetlands not previously known to be onsite or in area are discovered during construction.
- 1.9.2 Plan: include methods to assure protection of known or discovered resources and identify lines of communication between Contractor personnel and Consultant.

1.10 Notification

- 1.10.1 Consultant/and or Owner will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Protection plan.

- 1.10.2 Contractor: after receipt of such notice, inform Consultant/and or Owner of proposed corrective action and take such action for approval by Owner
 - 1.10.2.1 Take action only after receipt of written approval by Owner
 - 1.10.2.2 Owner will issue stop order of work until satisfactory corrective action has been taken.
 - 1.10.2.3 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

2. PRODUCTS

2.1 Not Used

- 2.1.1 Not Used.

3. EXECUTION

3.1 Cleaning

- 3.1.1 Progress Cleaning: clean in accordance with Section [01 74 11- Cleaning]
 - 3.1.1.1 Leave Work area clean at end of each day.
- 3.1.2 Bury rubbish and waste materials on site where directed after receipt of written approval from Owner
- 3.1.3 Ensure public waterways, storm and sanitary sewers remain free of waste and volatile materials disposal.
- 3.1.4 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section [01 74 11- Cleaning] .
- 3.1.5 Waste Management: separate waste materials for [reuse] [recycling] in accordance with Section [01 74 19- Waste Management and Disposal]
 - 3.1.5.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION

1. GENERAL

1.1 Summary

- 1.1.1 This Section references to laws, by laws, ordinances, rules, regulations, codes, orders of Authority Having Jurisdiction, and other legally enforceable requirements applicable to Work and that are; or become, in force during performance of Work.

1.2 Related Requirements

- 1.2.1 [Section 02 41 16.13– Building Demolition]
1.2.2 [Section 02 41 19.13– Selective Building Demolition]
1.2.3 [Section 02 41 19.16– Selective Interior Demolition]
1.2.4 Section 22 05 05– Selective Demolition for Plumbing]
1.2.5 [Section 23 05 05– Selective Demolition for HVAC]
1.2.6 [Section 26 05 05– Selective Demolition for Electrical]

1.3 References To Regulatory Requirements

- 1.3.1 Perform Work in accordance with [Insert Provincial Code and Applicable Date] [National Building Code of Canada (NBC)] [2015] including amendments up to tender closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.
- 1.3.2 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
- 1.3.2.1 Meet or exceed requirements of:
1.3.2.2 Contract documents.
1.3.2.3 Specified standards, codes and referenced documents.

1.4 Hazardous Material Discovery

- 1.4.1 Asbestos: demolition of spray or trowel-applied asbestos is hazardous to health. Stop work immediately when material resembling spray or trowel-applied asbestos is encountered during demolition work. Notify Consultant and Owner. Refer to Section [02 82 00.03- Asbestos Abatement - Maximum Precautions] [02 82 00.02- Asbestos Abatement - Intermediate Precautions] [02 82 00.01- Asbestos Abatement - Minimum Precautions] .
- 1.4.2 PCB: Polychlorinated Biphenyl: stop work immediately when material resembling Polychlorinated Biphenyl is encountered during demolition work. Notify Consultant and Owner. Refer to Section [02 84 00- Polychlorinate Biphenyl Remediation] .

- 1.4.3 Mould: stop work immediately when material resembling mould is encountered during demolition work. Notify Consultant and Owner . Refer to Section [02 85 00.03- Mould Remediation - Maximum Precautions] [02 85 00.01- Mould Remediation - Minimum Precautions] [02 85 00.02Mould Remediation - Intermediate Precautions - Intermediate Precautions] .

1.5 Building Smoking Environment

- 1.5.1 Comply with smoking restrictions and municipal by-laws.

1.6 Quality Assurance

- 1.6.1 Regulatory Requirements: Except as otherwise specified, [Constructor] shall apply for, obtain, and pay fees associated with, permits, licenses, certificates, and approvals required by regulatory requirements and Contract Documents, based on General Conditions of Contract and the following:
- 1.6.2 Regulatory requirements and fees in force on date of Bid submission, and
- 1.6.3 A change in regulatory requirements or fees scheduled to become effective after date of tender submission and of which public notice has been given before date of tender submission

2. PRODUCTS

2.1 Easements And Notices

- 2.1.1 Owner will obtain permanent easements and rights of servitude that may be required for performance of Work.
- 2.1.2 [Constructor] shall give notices required by regulatory requirements.

2.2 Permits

- 2.2.1 Development Permit: Owner has applied for, obtained, and paid for development permit.
- 2.2.2 Building Permit:
 - 2.2.2.1 [Owner] has applied for and will be paying for building permit. [Constructor] is responsible for obtaining or coordinating other permits required for Work and its various parts.
 - 2.2.2.2 [Constructor] will require that specific [Subcontractor] 's obtain and pay for permits required by authorities having jurisdiction, where their Work is affected by Work requiring permits including [medical gas installation] [asbestos abatement and control] permit[s] .

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Regulatory Requirements

2.2.2.3 [Constructor] shall display building permit and other permits in a conspicuous location at Place of Work.

2.2.3 Occupancy Permits:

2.2.3.1 [Constructor] shall apply for, obtain, and pay for occupancy permits at the end of each phase (2), including partial occupancy permits where required by authority having jurisdiction.

2.2.3.2 [Consultant] will issue appropriate instructions to [Constructor] for correction to Work where Contract Document deficiencies are required to be corrected in order to obtain occupancy permits, including partial occupancy permits.

2.2.3.3 [Constructor] shall correct deficiencies in accordance with [Consultant] 's instructions. Where deficiency is not corrected, Owner reserves the right to make correction and charge [Constructor] for costs incurred.

2.2.3.4 [Constructor] shall turn occupancy permits over to [Owner]

3. EXECUTION

3.1 Not Used

3.1.1 Not Used.

END OF SECTION

1. GENERAL

1.1 General

1.1.1 Read and conform to:

- 1.1.1.1** The General Conditions and Supplementary Conditions of the Regional Municipality of Peel Contract;
- 1.1.1.2** Division 1 requirements and documents referred to therein.

1.2 Imperial / International System Of Units (SI)

1.2.1 Submittals containing measurements of any kind in Imperial system of measurements shall be on Consultant's approval only. Submit all measurements in International System of Units (SI) conforming to following standards:

- 1.2.1.1** AN3-A31-M75: Series of Standards for Metric Dimensional Coordination in Building.
- 1.2.1.2** CSA Z234.1-00: Metric Practice Guide.

1.3 References

- 1.3.1** Where reference is made to codes, specification standards, manuals, contract forms, installation, application and maintenance instructions, produced by various organizations, conform to the latest edition as amended and revised to date of Contract.
- 1.3.2** If requested provide copy on Site of such standard(s).
- 1.3.3** Amendments to reference documents after award of Contract affecting Contract Price shall be dealt with in accordance with the General Conditions of the Contract - for Valuation of Changes.
- 1.3.4** Where Contract Documents exceed minimum Code requirement, or referenced Standard requirements, satisfy such additional requirements.
- 1.3.5** Where standard designates authorities such as "Engineer", "Owner" "Purchaser" or some other such designation, these designations shall be taken to mean "Consultant".

1.4 Acronyms

1.4.1 Following acronyms may be/are used in Contract Documents:

- 1.4.1.1** ACI: American Concrete Institute
- 1.4.1.2** AIEE: American Institute of Electrical Engineers
- 1.4.1.3** AISC: American Institute of Steel Construction
- 1.4.1.4** ANSI: American National Standards Institute

1.4.1.5	ASTM: American Society for Testing and Materials
1.4.1.6	AWWA: American Water Works Association
1.4.1.7	CAN: National Standards of Canada
1.4.1.8	CCA: Canadian Construction Association
1.4.1.9	CEC: Canadian Electrical Code (published by CSA)
1.4.1.10	CGA: Canadian Gas Association
1.4.1.11	CGSB: Canadian General Standards Board
1.4.1.12	CISC: Canadian Institute of Steel Construction
1.4.1.13	CPCI: Canadian Prestressed Concrete Institute
1.4.1.14	CSA: Canadian Standards Association
1.4.1.15	CSC: Construction Specifications Canada
1.4.1.16	ECP: Environmental Choice Program
1.4.1.17	EEMAC: Electrical and Electronic Manufacturers Association of Canada/Electrical Equipment Manufacturers Association of Canada
1.4.1.18	IEEE: Institute of Electrical and Electronics Engineers
1.4.1.19	MTO: Ministry of Transportation, Province of Ontario
1.4.1.20	NBC: National Building Code of Canada
1.4.1.21	NEMA: National Electrical Manufacturer's Association (U.S.A.) 1.4.1.22. NFPA: National Fire Protection Association
1.4.1.22	NIOSH: National Institute of Occupational Safety and Health. 1.4.1.24. NRC: National Research Council of Canada
1.4.1.23	NSC: National Standards of Canada
1.4.1.24	OBC: Ontario Building Code
1.4.1.25	OFC: Ontario Fire Code
1.4.1.26	OHSA: Occupational Health and Safety Act
1.4.1.27	OPSS: Ontario Provincial Standards Section
1.4.1.28	SPMDD :Standard Proctor Modified Dry Density
1.4.1.29	TSSA: Technical Standards and Safety Authority
1.4.1.30	ULC: Underwriters' Laboratories of Canada
1.4.1.31	UL: Underwriters' Laboratories (USA)
1.4.1.32	WHPS: Warnock Hersey Professional Services

1.5 Abbreviations

1.5.1 Following abbreviations may be/are used in Contract Documents:

o	degree (angles)	lin ft	linear foot
µm	Micrometer	m	metre
A	Ampere	m ²	square metre
AC	alternating current	m ³	cubic metre
aff	above finished floor	max	maximum
cfs	cubic feet per second	MBF	thousand board feet
cu ft	cubic feet	MCC	motor control centre
cu yd	cubic yard	MH	maintenance hole
c/w	complete with	min	minimum
oC	degree Celsius	mm	millimetre
oF	degree Fahrenheit	MPa	megapascal
dft	dry film thickness	N	newton
dia	Diameter	N.m	newton metre
F.O.B.	free on board	oc	on centre
fpm	feet per minute	od	outside diameter
(ft)(')	Foot	oz	ounce
g	Gram	Pa	Pascal
ga	Gauge	ppm	Parts per million
gal	gallon(Imperial)	psi	pounds per square inch
ha	Hectare	PVC	polyvinyl chloride
hp	Horsepower	rev	revision
hr	Hour	rpm	revolutions per minute
Hz	Hertz	s	second
id	inside diameter	scfm	standard cubic feet per
lgpd	gallons per day (Imp)	sq ft	square feet
lgph	gallons per hour (Imp)	sq mi	square mile
(in.)(")	Inch	sq yd	square yard
J	Joule	t	tonne
kg	Kilogram	USgpm	gallons per minute
km	Kilometer	(US)	
kN	Kilonewton	V	volt
kPa	Kilopascal	vt ft	vertical foot
L	Litre	W	watt
L/s	litre per second	yd	yard
lb	Pound		
lb/ft	pound per foot		

END OF SECTION

1. GENERAL

1.1 Reference Standards

- 1.1.1 Canadian Construction Documents Committee (CCDC)
 - 1.1.1.1 CCDC 2-2020 , Stipulated Price Contract.

1.2 Inspection

- 1.2.1 Refer to CCDC 2, GC 2.3 and Peel Region Supplementary Conditions
- 1.2.2 Allow Consultant access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
- 1.2.3 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Consultant instructions, or law of Place of Work.
- 1.2.4 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
- 1.2.5 Consultant will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction including fee for consultant's time.

1.3 Independent Inspection Agencies

- 1.3.1 Independent Inspection/Testing Agencies will be engaged by Consultant for purpose of inspecting and/or testing portions of Work.
- 1.3.2 Provide equipment required for executing inspection and testing by appointed agencies.
- 1.3.3 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- 1.3.4 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Consultant at no cost to Consultant. Pay costs for retesting and reinspection.

1.4 Access To Work

- 1.4.1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.
- 1.4.2 Co-operate to provide reasonable facilities for such access.

1.5 Procedures

- 1.5.1 Notify appropriate agency and Consultant in advance of requirement for tests, in order that attendance arrangements can be made.
- 1.5.2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in Work.
- 1.5.3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

1.6 Rejected Work

- 1.6.1 Refer to CCDC, GC 2.4.

1.7 Reports

- 1.7.1 Submit four [4] copies of inspection and test reports to Consultant.
- 1.7.2 Provide copies to [manufacturer or fabricator of material being inspected or tested] [subcontractor of work being inspected or tested].

1.8 Tests And Mix Designs

- 1.8.1 Furnish test results and mix designs as requested.
- 1.8.2 Cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work will be appraised by Consultant and may be authorized as recoverable.

1.9 Mock-Ups

- 1.9.1 Prepare mock-ups for Work specifically requested in specifications. Include for Work of Sections required to provide mock-ups.
- 1.9.2 Construct in locations as specified in specific Section acceptable to Consultant.
- 1.9.3 Prepare mock-ups for Consultant's review with reasonable promptness and in orderly sequence, to not cause delays in Work.
- 1.9.4 Failure to prepare mock-ups in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- 1.9.5 If requested, Consultant will assist in preparing schedule fixing dates for preparation.
- 1.9.6 Specification section identifies whether mock-up may remain as part of Work or if it is to be removed and when.

1.10 Mill Tests

- 1.10.1 Submit mill test certificates as requested or required of specification Sections.

1.11 Equipment And Systems

- 1.11.1 Submit adjustment and balancing reports for mechanical, electrical and building equipment systems.
- 1.11.2 Refer to Mechanical and Electrical Engineering drawings for further specifications.

2. PRODUCTS

2.1 Not Used

- 2.1.1 Not Used.

3. EXECUTION

3.1 Not Used

- 3.1.1 Not Used.

END OF SECTION

1. GENERAL

1.1 Reference Standards

- 1.1.1 Canadian Construction Documents Committee (CCDC)
- 1.1.2 CCDC 2-2020 , Stipulated Price Contract.
- 1.1.3 Canada Green Building Council (CaGBC)
- 1.1.4 Canadian General Standards Board (CGSB)
- 1.1.5 CAN/CGSB 1.189-[00] , Exterior Alkyd Primer for Wood.
- 1.1.6 CGSB 1.59-[97] , Alkyd Exterior Gloss Enamel.
- 1.1.7 CSA Group (CSA)
- 1.1.8 CSA-A23.1/A23.2-[04] , Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
- 1.1.9 CSA-0121-[M1978(R2003)] , Douglas Fir Plywood.
- 1.1.10 CAN/CSA-S269.2-[M1987(R2003)] , Access Scaffolding for Construction Purposes.
- 1.1.11 CAN/CSA-Z321-[96(R2001)] , Signs and Symbols for the Occupational Environment.
- 1.1.12 Public Works Government Services Canada (PWGSC) Standard Acquisition Clauses and Conditions (SACC)-ID: R0202D, Title: General Conditions 'C', In Effect as of: May 14, 2004.
- 1.1.13 U.S. Environmental Protection Agency (EPA) / Office of Water
- 1.1.14 EPA 832R92005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

1.2 Installation And Removal

- 1.2.1 Prepare site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation.
- 1.2.2 Identify areas which have to be gravelled to prevent tracking of mud.
- 1.2.3 Indicate use of supplemental or other staging area.
- 1.2.4 Provide construction facilities in order to execute work expeditiously.
- 1.2.5 Remove from site all such work after use.

1.3 Scaffolding

- 1.3.1 Scaffolding in accordance with CAN/CSA-S269.2.

- 1.3.2 Provide and maintain [ramps] [swing staging] [platforms] [ladders] [scaffolding] [temporary stairs] .

1.4 Hoisting

- 1.4.1 Provide, operate and maintain hoists [cranes] required for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for their use of hoists.
- 1.4.2 Hoists [cranes] to be operated by qualified operator.

1.5 Elevators

- 1.5.1 Designated existing elevators to be used by construction personnel and transporting of materials . Co-ordinate use with Owner.
- 1.5.2 Provide protective coverings for finish surfaces of cars and entrances.

1.6 Site Storage/Loading

- 1.6.1 Refer to CCDC 2 and Peel Region Supplementary Conditions

1.7 Construction Parking

- 1.7.1 Parking will be permitted on site provided it does not disrupt performance of Work .
- 1.7.2 Provide and maintain adequate access to project site.
- 1.7.3 Clean runways and taxi areas where used by Contractor's equipment.

1.8 Security

- 1.8.1 Provide and pay for responsible security personnel to guard site and contents of site after working hours and during holidays.

1.9 Equipment, Tool And Materials Storage

- 1.9.1 Provide and maintain, in clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.
- 1.9.2 Locate materials not required to be stored in weatherproof sheds on site in manner to cause least interference with work activities.

1.10 Clean-Up

- 1.10.1 Remove construction debris, waste materials, packaging material from work site daily.
- 1.10.2 Clean dirt or mud tracked onto paved or surfaced roadways.
- 1.10.3 Store materials resulting from demolition activities that are salvageable.
- 1.10.4 Stack stored new or salvaged material not in construction facilities.

2. **PRODUCTS**

2.1 **Not Used**

2.1.1 Not Used.

3. **EXECUTION**

3.1 **Not Used**

END OF SECTION

**GENERAL CONTRACTING SERVICES FOR
INTERIOR RENOVATIONS AT 180 DERRY ROAD E., MISSISSAUGA
FOR PEEL REGIONAL POLICE**

Temporary Barriers and Enclosures

1. GENERAL

1.1 Summary

- 1.1.1 Use of Barriers and Enclosures: The Contractor shall furnish, erect, and maintain temporary barriers, barricades, enclosures, and temporary construction fencing as required for the following:
- 1.1.2 To protect the health and safety of occupants and the general public from exposure to immediate physical harm as well as to noise, dust, and fumes. Note that this Section does not provide minimum requirements related to Indoor Air Quality.
- 1.1.3 To protect new and pre-existing adjacent construction from exposure to physical damage, dust, dirt, and water.
- 1.1.4 To provide security of valuable property.
- 1.1.5 To protect trees and plants.

2. PRODUCTS

2.1 General Fabrication

- 2.1.1 Substantial Construction: Barriers and enclosures shall be of adequately substantial construction to serve their purpose without failure throughout the duration of their use. Materials may be new or used, suitable for the intended purpose, but shall not violate requirements of applicable codes and standards.

3. EXECUTION

3.1 Temporary Barrier Basic Requirements

- 3.1.1 Install barriers in accordance with the Drawings.
- 3.1.2 Install facilities of a neat and reasonable uniform appearance, structurally adequate for required purposes.
- 3.1.3 Install barriers and enclosures so as to not create new hazards such as tripping or protrusions that might be a source of safety concern to pedestrians or passers-by.
- 3.1.4 When necessary due to placement of barriers, establish reasonable alternative access and traffic control for vehicles and pedestrians.
- 3.1.5 When barriers are in the public right of way or on adjacent private property, obtain construction easements / licensing agreements / permits for the use prior to placement of the barriers.
- 3.1.6 Maintain barriers during entire construction period.
- 3.1.7 Relocate barriers as required by progress of construction.

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Temporary Barriers and Enclosures

3.2 Removal

- 3.2.1 Completely remove barricades, including foundations, when construction has progressed to the point that they are no longer needed, and when approved by the Owner.
- 3.2.2 Clean and repair damage caused by installation and clean the area.

END OF SECTION

1. GENERAL

1.1 Reference Standards

- 1.1.1 Canadian Construction Documents Committee (CCDC)
 - 1.1.1.1 CCDC 2-2020, Stipulated Price Contract.
- 1.1.2 Within text of each specifications section, reference may be made to reference standards.
- 1.1.3 Conform to these reference standards, in whole or in part as specifically requested in specifications.
- 1.1.4 If there is question as to whether products or systems are in conformance with applicable standards, Consultant reserves right to have such products or systems tested to prove or disprove conformance.
- 1.1.5 Cost for such testing will be born by Consultant in event of conformance with Contract Documents or by Contractor in event of non-conformance.

1.2 Quality

- 1.2.1 Refer to CCDC 2 and Peel Region Supplementary Conditions.
- 1.2.2 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.
- 1.2.3 Procurement policy is to acquire, in cost effective manner, items containing highest percentage of recycled and recovered materials practicable consistent with maintaining satisfactory levels of competition. Make reasonable efforts to use recycled and recovered materials and in otherwise utilizing recycled and recovered materials in execution of work.
- 1.2.4 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
- 1.2.5 Should disputes arise as to quality or fitness of products, decision rests strictly with Consultant based upon requirements of Contract Documents.
- 1.2.6 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
- 1.2.7 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for

operating instructions, or when located in mechanical or electrical rooms.

1.3 Availability

- 1.3.1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for items. If delays in supply of products are foreseeable, notify Consultant of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.
- 1.3.2 In event of failure to notify Consultant at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Consultant reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.4 Storage, Handling And Protection

- 1.4.1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
- 1.4.2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
- 1.4.3 Store products subject to damage from weather in weatherproof enclosures.
- 1.4.4 Store cementitious products clear of earth or concrete floors, and away from walls.
- 1.4.5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.
- 1.4.6 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.
- 1.4.7 Remove and replace damaged products at own expense and to satisfaction of Consultant.
- 1.4.8 Touch-up damaged factory finished surfaces to Consultant's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.5 Transportation

- 1.5.1 Pay costs of transportation of products required in performance of Work.

- 1.5.2 Transportation cost of products supplied by Owner will be paid for by Owner. Unload, handle, and store such products.

1.6 Manufacturer's Instructions

- 1.6.1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.
- 1.6.2 Notify Consultant in writing, of conflicts between specifications and manufacturer's instructions, so that Consultant will establish course of action.
- 1.6.3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Consultant to require removal and re-installation at no increase in Contract Price or Contract Time.

1.7 QUALITY OF WORK

- 1.7.1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Consultant if required Work is such as to make it impractical to produce required results.
- 1.7.2 Do not employ anyone unskilled in their required duties. Consultant reserves right to require dismissal from site, workers deemed incompetent or careless.
- 1.7.3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Consultant, whose decision is final.

1.8 Co-Ordination

- 1.8.1 Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision.
- 1.8.2 Be responsible for coordination and placement of openings, sleeves and accessories.

1.9 Concealment

- 1.9.1 In finished areas conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.
- 1.9.2 Before installation inform Consultant if there is interference. Install as directed by Consultant.

1.10 Remedial Work

- 1.10.1 Refer to Section 01 73 00- Execution, CCDC 2 and Peel Region Supplementary Conditions

1.11 Location Of Fixtures

- 1.11.1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.
- 1.11.2 Inform Consultant of conflicting installation. Install as directed.

1.12 Fastenings

- 1.12.1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.
- 1.12.2 Prevent electrolytic action between dissimilar metals and materials.
- 1.12.3 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.
- 1.12.4 Keep exposed fastenings to a minimum, space evenly and install neatly.
- 1.12.5 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

1.13 Fastenings - Equipment

- 1.13.1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
- 1.13.2 Bolts may not project more than one diameter beyond nuts.
- 1.13.3 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

1.14 Protection Of Work In Progress

- 1.14.1 Prevent overloading of parts of building. Do not cut, drill or sleeve load bearing structural member, unless specifically indicated without written approval of Consultant.

1.15 Existing Utilities

- 1.15.1 When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to Work, [and/or building occupants] [and pedestrian and vehicular traffic] .
- 1.15.2 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

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Common Product Requirements

2. **PRODUCTS**

2.1 **Not Used**

2.1.1 Not Used.

3. **EXECUTION**

3.1 **Not Used**

3.1.1 Not Used.

END OF SECTION

1. GENERAL

1.1 Reference Standards

- 1.1.1 Canadian Construction Documents Committee (CCDC)
 - 1.1.1.1 CCDC 2-2020 , Stipulated Price Contract.
- 1.1.2 Owner's identification of existing survey control points and property limits.

1.2 Survey Reference Points

- 1.2.1 Existing base horizontal and vertical control points are designated on drawings.
- 1.2.2 Locate, confirm and protect control points prior to starting site work. Preserve permanent reference points during construction.
- 1.2.3 Make no changes or relocations without prior written notice to Consultant .
- 1.2.4 Report to Consultant when reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.
- 1.2.5 Require surveyor to replace control points in accordance with original survey control.

1.3 Survey Requirements

- 1.3.1 Establish [two] permanent bench marks on site, referenced to established bench marks by survey control points. Record locations, with horizontal and vertical data in Project Record Documents.
- 1.3.2 Establish lines and levels, locate and lay out, by instrumentation.
- 1.3.3 Stake for grading, fill [and topsoil] placement [and landscaping features] .
- 1.3.4 Stake slopes [and berms] .
- 1.3.5 Establish pipe invert elevations.
- 1.3.6 Stake batter boards [for foundations] .
- 1.3.7 Establish foundation [column locations] and floor elevations.
- 1.3.8 Establish lines and levels for mechanical and electrical work.

1.4 Existing Services

- 1.4.1 Before commencing work, establish location and extent of service lines in area of Work and notify Consultant of findings.
- 1.4.2 Remove abandoned service lines within [2] m of structures. Cap or otherwise seal lines at cut-off points as directed by Consultant.

1.5 Location Of Equipment And Fixtures

- 1.5.1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.
- 1.5.2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.
- 1.5.3 Inform Consultant of impending installation and obtain approval for actual location.
- 1.5.4 Submit field drawings to indicate relative position of various services and equipment when required by Consultant.

1.6 Records

- 1.6.1 Maintain a complete, accurate log of control and survey work as it progresses.
- 1.6.2 On completion of foundations and major site improvements, prepare a certified survey showing dimensions, locations, angles and elevations of Work.
- 1.6.3 Record locations of maintained, re-routed and abandoned service lines.

1.7 Action And Informational Submittals

- 1.7.1 Submit name and address of Surveyor to Consultant.
- 1.7.2 On request of Consultant, submit documentation to verify accuracy of field engineering work.
- 1.7.3 Submit certificate signed by surveyor certifying [and noting] those elevations and locations of completed Work that conform [and do not conform] with Contract Documents.

1.8 Subsurface Conditions

- 1.8.1 Promptly notify Consultant in writing if subsurface conditions at Place of Work differ materially from those indicated in Contract Documents, or a reasonable assumption of probable conditions based thereon.
- 1.8.2 After prompt investigation, should Consultant determine that conditions do differ materially, instructions will be issued for changes in Work as provided in Changes and Change Orders.

2. PRODUCTS

2.1 Not Used

- 2.1.1 Not Used.

3. **EXECUTION**

3.1 **Not Used**

3.1.1 Not Used.

END OF SECTION

1. GENERAL

1.1 Action And Informational Submittals

- 1.1.1 Submittals: in accordance with Section [01 33 00- Submittal Procedures] .
- 1.1.2 Submit written request in advance of cutting or alteration which affects:
 - 1.1.2.1 Structural integrity of elements of project.
 - 1.1.2.2 Integrity of weather-exposed or moisture-resistant elements.
 - 1.1.2.3 Efficiency, maintenance, or safety of operational elements.
 - 1.1.2.4 Visual qualities of sight-exposed elements.
 - 1.1.2.5 Work of Owner or separate contractor.
- 1.1.3 Include in request:
 - 1.1.3.1 Identification of project.
 - 1.1.3.2 Location and description of affected Work.
 - 1.1.3.3 Statement on necessity for cutting or alteration.
 - 1.1.3.4 Description of proposed Work, and products to be used.
 - 1.1.3.5 Alternatives to cutting and patching.
 - 1.1.3.6 Effect on Work of Owner or separate contractor.
 - 1.1.3.7 Written permission of affected separate contractor.
 - 1.1.3.8 Date and time work will be executed.

1.2 Materials

- 1.2.1 Required for original installation.
- 1.2.2 Change in Materials: Submit request for substitution in accordance with Section [01 33 00- Submittal Procedures] .

1.3 Preparation

- 1.3.1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.
- 1.3.2 After uncovering, inspect conditions affecting performance of Work.
- 1.3.3 Beginning of cutting or patching means acceptance of existing conditions.
- 1.3.4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.
- 1.3.5 Provide protection from elements for areas which are to be exposed by uncovering work; maintain excavations free of water.

1.4 Execution

- 1.4.1 Execute cutting, fitting, and patching [including excavation and fill,] to complete Work.
- 1.4.2 Fit several parts together, to integrate with other Work.
- 1.4.3 Uncover Work to install ill-timed Work.
- 1.4.4 Remove and replace defective and non-conforming Work.
- 1.4.5 [Remove samples of installed Work for testing] .
- 1.4.6 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.
- 1.4.7 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.
- 1.4.8 Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.
- 1.4.9 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.
- 1.4.10 Restore work with new products in accordance with requirements of Contract Documents.
- 1.4.11 Fit Work [airtight] to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- 1.4.12 At penetration of fire rated wall, ceiling, or floor construction, completely seal voids with [firestopping] material in accordance with Section [07 84 00- Firestopping] , full thickness of the construction element.
- 1.4.13 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.
- 1.4.14 Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas except where indicated otherwise.

1.5 Waste Management And Disposal

- 1.5.1 Separate waste materials for [reuse] [recycling] in accordance with Section [01 74 19- Waste Management and Disposal] .

2. PRODUCTS

2.1 Not Used

- 2.1.1 Not Used.

3. **EXECUTION**

3.1 **Not Used**

3.1.1 Not Used.

END OF SECTION

1. GENERAL

1.1 Related Requirements

- 1.1.1 Applicable in general, individual work related Sections not listed

1.2 Reference Standards

- 1.2.1 Canadian Construction Documents Committee CCDC 2-2020 ,
Stipulated Price Contract.

1.3 Project Cleanliness

- 1.3.1 Maintain Work in tidy condition, free from accumulation of waste products and debris, including that caused by Owner or other Contractors.
- 1.3.2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Consultant. Do not burn waste materials on site.
- 1.3.3 Clear snow and ice from access to building, bank/pile snow in designated areas only.
- 1.3.4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- 1.3.5 All waste to be removed from site daily
- 1.3.6 Provide and use marked separate bins for recycling. Refer to Section 01 74 19 - Waste Management and Disposal.
- 1.3.7 Dispose of waste materials and debris off site in a responsible manner in accordance with local regulations.
- 1.3.8 Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.
- 1.3.9 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- 1.3.10 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- 1.3.11 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- 1.3.12 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

1.4 Final Cleaning

- 1.4.1 Refer to CCDC 2 and Peel Region Supplementary Conditions.

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- 1.4.2 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- 1.4.3 Remove waste products and debris and leave Work clean and suitable for occupancy.
- 1.4.4 Prior to final review remove surplus products, tools, construction machinery and equipment.
- 1.4.5 Remove waste products and debris including that caused by Owner or other Contractors.
- 1.4.6 Remove waste materials from site at regularly scheduled times or dispose of as directed by Consultant. Do not burn waste materials on site.
- 1.4.7 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- 1.4.8 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.
- 1.4.9 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, floors and ceilings.
- 1.4.10 Clean lighting reflectors, lenses, and other lighting surfaces.
- 1.4.11 Vacuum clean and dust building interiors, behind grilles, louvres and screens.
- 1.4.12 Wax, seal, shampoo or prepare floor finishes, as recommended by manufacturer.
- 1.4.13 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
- 1.4.14 Clean equipment and fixtures to sanitary condition; clean or replace filters of mechanical equipment.
- 1.4.15 Remove debris and surplus materials from crawl areas and other accessible concealed spaces.

1.5 Waste Management And Disposal

- 1.5.1 Separate waste materials for recycling in accordance with Section 01 74 19 - Waste Management and Disposal.

2. PRODUCTS

2.1 Not Used

- 2.1.1 Not Used.

3. **EXECUTION**

3.1 **Not Used**

3.1.1 Not Used.

END OF SECTION

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Waste Management and Disposal

1. GENERAL

1.1 Summary

1.1.1 This Section includes requirements for management of construction waste and disposal, which forms the Contractor's commitment to reduce and divert waste materials from landfill and includes the following:

1.1.2 Owner has established that this project shall generate the least amount of waste possible and that processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors be employed by the Contractor.

1.2 Related Requirements

1.2.1 [Section 01 52 00– Construction Facilities]

1.2.2 [Section 02 41 13– Selective Site Demolition]

1.3 Reference Standards

1.3.1 American Society for Testing and Materials (ASTM):

1.3.1.1 ASTM E1609 01, Standard Guide for Development and Implementation of a Pollution Prevention Program

1.3.2 Canada Green Building Council (CaGBC)

1.3.3 Recycling Certification Institute (RCI):

1.3.3.1 RCI Certification Construction and Demolition Materials Recycling

1.4 Definitions

1.4.1 Clean Waste: Untreated and unpainted; not contaminated with oils, solvents, sealants or similar materials.

1.4.2 Construction [and Demolition] Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, [re modeling] operations.[repair and demolition]

1.4.3 Hazardous: Exhibiting the characteristics of hazardous substances including properties such as ignitability, corrosiveness, toxicity or reactivity.

1.4.4 Non hazardous: Exhibiting none of the characteristics of hazardous substances, including properties such as ignitability, corrosiveness, toxicity, or reactivity.

1.4.5 Non toxic: Not poisonous to humans either immediately or after a long period of exposure.

- 1.4.6 Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.
- 1.4.7 Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.
- 1.4.8 Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form; recycling does not include burning, incinerating, or thermally destroying waste.
- 1.4.9 Return: To give back reusable items or unused products to vendors for credit.
- 1.4.10 Reuse: To reuse a construction waste material in some manner on the project site.
- 1.4.11 Salvage: To remove a waste material from the project site to another site for resale or reuse by others.
- 1.4.12 Sediment: Soil and other debris that has been eroded and transported by storm or well production run off water.
- 1.4.13 Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.
- 1.4.14 Toxic: Poisonous to humans either immediately or after a long period of exposure.
- 1.4.15 Trash: Any product or material unable to be reused, returned, recycled, or salvaged.
- 1.4.16 Volatile Organic Compounds (VOC's): Chemical compounds common in and emitted by many building products over time through outgassing:
 - 1.4.16.1 Solvents in paints and other coatings;
 - 1.4.16.2 Wood preservatives; strippers and household cleaners;
 - 1.4.16.3 Adhesives in particleboard, fiberboard, and some plywood; and foam insulation.
 - 1.4.16.4 When released, VOC's can contribute to the formation of smog and can cause respiratory tract problems, headaches, eye irritations, nausea, damage to the liver, kidneys, and central nervous system, and possibly cancer.
- 1.4.17 Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

1.5 Submittals

- 1.5.1 Provide required information in accordance with Section 01 33 00 – Submittal Procedures.

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- 1.5.2 Alternative Waste Disposal: Prepare a listing of each material proposed to be salvaged, reused, recycled or composted during the course of the project, and the proposed local market for each material.
- 1.5.3 Landfill Materials: Identify materials that cannot be recycled, reused or composted and provide explanation or justification; energy will be considered as a viable alternative diversion strategy for these materials where facilities exist
- 1.5.4 Landfill Options: The name of the landfill where trash will be disposed of; landfill materials will form a part of the total waste generated by the project.
- 1.5.5 Materials Handling Procedures: A description of the means by which any recycled waste materials will be protected from contamination, and a description of the means to be employed in recycling the above materials consistent with requirements for acceptance by designated facilities.
- 1.5.6 Transportation: A description of the means of transportation of the recyclable materials, whether materials will be site separated and self hauled to designated centers, or whether mixed materials will be collected by a waste hauler and removed from the site, and destination of materials.

1.6 Quality Assurance

- 1.6.1 Certifications: Provide proof of the following during the course of the Work:
 - 1.6.1.1 Compliance Certification: Provide proof that recycling center is third party verified and is listed as a Certified Facility through the registration and certification requirements of the Recycling Certification Institute.
 - 1.6.1.2 Certification from Viking Recycling for removal and recycling of existing carpet

1.7 Delivery, Storage And Handling

- 1.7.1 Storage Requirements: Implement a recycling/reuse program that includes separate collection of waste materials as appropriate to the project waste and the available recycling and reuse programs in the project area.
- 1.7.2 Handling Requirements: Clean materials that are contaminated before placing in collection containers and ensure that waste destined for landfill does not get mixed in with recycled materials:
- 1.7.3 Deliver materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to recycling process.
- 1.7.4 Arrange for collection by or delivery to the appropriate recycling or reuse facility.

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- 1.7.5 Hazardous Waste and Hazardous Materials: Handle in accordance with applicable regulations.

2. PRODUCTS

2.1 Not Used

- 2.1.1 Not Used.

3. EXECUTION

3.1 Implementation

- 3.1.1 Instruction: Provide on site instruction of appropriate separation, handling, and recycling, salvage, reuse, composting and return methods being used for the project to [Subcontractor] 's at appropriate stages of the project.
- 3.1.2 Separation Facilities: Lay out and label a specific area to facilitate separation of materials for potential recycling, salvage, reuse, composting and return:
 - 3.1.2.1 Recycling and waste bin areas are to be kept neat and clean and clearly marked in order to avoid contamination of materials.
 - 3.1.2.2 Hazardous wastes shall be separated, stored, and disposed of in accordance with local regulations.

END OF SECTION

1. GENERAL

1.1 Related Requirements

- 1.1.1 Applicable in general to work included in the scope involving all trades.

1.2 Reference Standards

- 1.2.1 Canadian Construction Documents Committee (CCDC)
1.2.1.1 CCDC 2-2020 , Stipulated Price Contract.
- 1.2.2 Canadian Environmental Protection Act (CEPA)
1.2.2.1 SOR/2008-197, Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations.

1.3 Administrative Requirements

- 1.3.1 Acceptance of Work Procedures:
- 1.3.1.1 Contractor's Inspection: Contractor: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
- 1.3.1.1.1 Notify Consultant in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
- 1.3.1.1.2 Request Consultant's inspection.
- 1.3.1.2 Consultant's Inspection:
- 1.3.1.2.1 Consultant and Contractor to inspect Work and identify defects and deficiencies.
- 1.3.1.2.2 Contractor to correct Work as directed.
- 1.3.1.3 Completion Tasks: submit written certificates in English that tasks have been performed as follows:
- 1.3.1.3.1 Work: completed and inspected for compliance with Contract Documents.
- 1.3.1.3.2 Defects: corrected and deficiencies completed.
- 1.3.1.3.3 Equipment and systems: tested, adjusted, balanced and fully operational.
- 1.3.1.3.4 Certificates required by Fire Commissioner / Department: submitted.
- 1.3.1.3.5 Operation of systems: demonstrated to Owner's personnel.
- 1.3.1.3.6 Commissioning of mechanical systems: completed in accordance with 01 91 13-

GENERAL COMMISSIONING
REQUIREMENTS and Consultant.

1.3.1.3.7 Work: complete and ready for final inspection.

1.3.1.4 Final Inspection:

- i. When completion tasks are done, request final inspection of Work by Consultant and Contractor.
- ii. When Work incomplete according to Consultant, complete outstanding items and request re-inspection.

1.3.1.5 Declaration of Substantial Performance: when Consultant considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.

1.3.1.6 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 lien statute of Place of Work.

1.3.1.7 Final Payment:

- i. When Consultant considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.
- ii. Refer to CCDC 2: When Work deemed incomplete by Consultant, complete outstanding items and request re-inspection.

1.3.1.8 Payment of Holdback: after issuance of Certificate of Substantial Performance of Work, submit application for payment of holdback amount in accordance with contractual agreement.

1.4 Final Cleaning

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

1.4.1.1 Remove surplus materials, excess materials, rubbish, tools and equipment.

1.4.2 Waste Management: separate waste materials for recycling in accordance with Section 01 74 19- Waste Management and Disposal

2. PRODUCTS

2.1 Not Used

2.1.1 Not Used.

3. **EXECUTION**

3.1 **Not Used**

3.1.1 Not Used.

END OF SECTION

1. GENERAL

1.1 Related Requirements

- 1.1.1 Applicable in general to work included in the scope involving all trades.

1.2 Reference Standards

- 1.2.1 Canadian Environmental Protection Act (CEPA)
 - 1.2.1.1 SOR/2008-197, Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations.

1.3 Administrative Requirements

- 1.3.1 Pre-warranty Meeting:
 - 1.3.1.1 Convene meeting one [1] week prior to contract completion with Consultant and Contractor's representative, in accordance with Section 01 31 19- Project Meetings to:
 - 1.3.1.1.1 Verify Project requirements.
 - 1.3.1.1.2 Review warranty requirements, manufacturer's options, installation instructions.
 - 1.3.1.2 Consultant to establish communication procedures for:
 - 1.3.1.2.1 Notifying construction warranty defects.
 - 1.3.1.2.2 Determine priorities for type of defects.
 - 1.3.1.2.3 Determine reasonable response time.
 - 1.3.1.3 Contact information for bonded and licensed company for warranty work action: provide name, telephone number and address of company authorized for construction warranty work action.
 - 1.3.1.4 Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action.

1.4 Action And Informational Submittals

- 1.4.1 Provide submittals in accordance with Section 01 33 00- Submittal Procedures.
- 1.4.2 One [1] week prior to Substantial Performance of the Work, submit to the Consultant, three [3] final copies of operating and maintenance manuals in English.
- 1.4.3 Provide spare parts, maintenance materials and special tools of same quality and manufacture as products provided in Work.
- 1.4.4 Provide evidence, if requested, for type, source and quality of products supplied.

1.5 Format

- 1.5.1 Organize data as instructional manual.
- 1.5.2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf [219 x 279] mm with spine and face pockets.
- 1.5.3 When multiple binders are used correlate data into related consistent groupings.
 - 1.5.3.1 Identify contents of each binder on spine.
- 1.5.4 Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.
- 1.5.5 Arrange content by systems, under Section numbers and sequence of Table of Contents.
- 1.5.6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
- 1.5.7 Text: manufacturer's printed data, or typewritten data.
- 1.5.8 Drawings: provide with reinforced punched binder tab.
 - 1.5.8.1 Bind in with text; fold larger drawings to size of text pages.
- 1.5.9 Provide [1:1] scaled CAD files in dwg format on CD (or USB stick if acceptable.)

1.6 Contents - Project Record Documents

- 1.6.1 Table of Contents for Each Volume: provide title of project;
 - 1.6.1.1 Date of submission; names.
 - 1.6.1.2 Addresses, and telephone numbers of Consultant and Contractor with name of responsible parties.
 - 1.6.1.3 Schedule of products and systems, indexed to content of volume.
- 1.6.2 For each product or system:
 - 1.6.2.1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
- 1.6.3 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.
- 1.6.4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
- 1.6.5 Typewritten Text: as required to supplement product data.

- 1.6.5.1 Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section [01 45 00- Quality Control] .

- 1.6.6 Training: refer to Section [01 79 00- Demonstration and Training] .

1.7 As -Built Documents And Samples

- 1.7.1 Maintain, in addition to requirements in General Conditions, at site for Consultant one record copy of:
 - 1.7.1.1 Contract Drawings.
 - 1.7.1.2 Specifications.
 - 1.7.1.3 Addenda.
 - 1.7.1.4 Change Orders and other modifications to Contract.
 - 1.7.1.5 Reviewed shop drawings, product data, and samples.
 - 1.7.1.6 Field test records.
 - 1.7.1.7 Inspection certificates.
 - 1.7.1.8 Manufacturer's certificates.
- 1.7.2 Store record documents and samples in field office apart from documents used for construction.
 - 1.7.2.1 Provide files, racks, and secure storage.
- 1.7.3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual.
 - 1.7.3.1 Label each document "PROJECT RECORD" in neat, large, printed letters.
- 1.7.4 Maintain record documents in clean, dry and legible condition.
 - 1.7.4.1 Do not use record documents for construction purposes.
- 1.7.5 Keep record documents and samples available for inspection by Consultant.

1.8 Recording Information On Project Record Documents

- 1.8.1 Record information on set of black line opaque drawings, and in copy of Project Manual,] provided by Consultant.
- 1.8.2 Use felt tip marking pens, maintaining separate colours for each major system, for recording information.
- 1.8.3 Record information concurrently with construction progress.
 - 1.8.3.1 Do not conceal Work until required information is recorded.
- 1.8.4 Contract Drawings and shop drawings: mark each item to record actual construction, including:
 - 1.8.4.1 Measured depths of elements of foundation in relation to finish first floor datum.

- 1.8.4.2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
- 1.8.4.3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
- 1.8.4.4 Field changes of dimension and detail.
- 1.8.4.5 Changes made by change orders.
- 1.8.4.6 Details not on original Contract Drawings.
- 1.8.4.7 Referenced Standards to related shop drawings and modifications.
- 1.8.5 Specifications: mark each item to record actual construction, including:
 - 1.8.5.1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
 - 1.8.5.2 Changes made by Addenda and change orders.
- 1.8.6 Other Documents: maintain inspection certifications, manufacturer's certifications, field test records, required by individual specifications sections.
- 1.8.7 Provide digital photos, if requested, for site records.

1.9 Final Survey

- 1.9.1 Submit final site survey certificate in accordance with Section [01 71 00- Examination and Preparation] , certifying that elevations and locations of completed Work are in conformance, or non-conformance with Contract Documents.

1.10 Equipment And Systems

- 1.10.1 For each item of equipment and each system include description of unit or system, and component parts.
- 1.10.2 Give function, normal operation characteristics and limiting conditions.
- 1.10.3 Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
- 1.10.4 Panel board circuit directories: provide electrical service characteristics, controls, and communications.
- 1.10.5 Include installed colour coded wiring diagrams.
- 1.10.6 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences.
 - 1.10.6.1 Include regulation, control, stopping, shut-down, and emergency instructions.

- 1.10.6.2 Include summer, winter, and any special operating instructions.
- 1.10.7 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- 1.10.8 Provide servicing and lubrication schedule, and list of lubricants required.
- 1.10.9 Include manufacturer's printed operation and maintenance instructions.
- 1.10.10 Include sequence of operation by controls manufacturer.
- 1.10.11 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- 1.10.12 Provide installed control diagrams by controls manufacturer.
- 1.10.13 Provide Contractor's co-ordination drawings, with installed colour coded piping diagrams.
- 1.10.14 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- 1.10.15 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- 1.10.16 Include test and balancing reports as specified in Section [01 45 00- Quality Control] [01 91 13- GENERAL COMMISSIONING REQUIREMENTS] .
- 1.10.17 Additional requirements: as specified in individual specification sections.

1.11 Materials And Finishes

- 1.11.1 Building products, applied materials, and finishes: include product data, with catalogue number, size, composition, and colour and texture designations.
- 1.11.2 [Provide information for re-ordering custom manufactured products] .
- 1.11.3 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- 1.11.4 Moisture-protection and weather-exposed products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- 1.11.5 Additional requirements: as specified in individual specifications sections.

1.12 Maintenance Materials

1.12.1 Spare Parts:

- 1.12.1.1 Provide spare parts, in quantities specified in individual specification sections.
- 1.12.1.2 Provide items of same manufacture and quality as items in Work.
- 1.12.1.3 Deliver to site ; place and store.
- 1.12.1.4 Receive and catalogue items.
 - 1.12.1.4.1 Submit inventory listing to Consultant.
 - 1.12.1.4.2 Include approved listings in Maintenance Manual.
- 1.12.1.5 Obtain receipt for delivered products and submit prior to final payment.

1.12.2 Extra Stock Materials:

- 1.12.2.1 Provide maintenance and extra materials, in quantities specified in individual specification sections.
- 1.12.2.2 Provide items of same manufacture and quality as items in Work.
- 1.12.2.3 Deliver to site; place and store.
- 1.12.2.4 Receive and catalogue items.
 - 1.12.2.4.1 Submit inventory listing to Consultant.
 - 1.12.2.4.2 Include approved listings in Maintenance Manual.
- 1.12.2.5 Obtain receipt for delivered products and submit prior to final payment.

1.12.3 Special Tools:

- 1.12.3.1 Provide special tools, in quantities specified in individual specification section.
- 1.12.3.2 Provide items with tags identifying their associated function and equipment.
- 1.12.3.3 Deliver to site; place and store.
- 1.12.3.4 Receive and catalogue items.
 - 1.12.3.4.1 Submit inventory listing to Consultant.
 - 1.12.3.4.2 Include approved listings in Maintenance Manual.

1.13 Delivery, Storage And Handling

- 1.13.1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.
- 1.13.2 Store in original and undamaged condition with manufacturer's seal and labels intact.

- 1.13.3 Store components subject to damage from weather in weatherproof enclosures.
- 1.13.4 Store paints and freezable materials in a heated and ventilated room.
- 1.13.5 Remove and replace damaged products at own expense and for review by Consultant.

1.14 Warranties And Bonds

- 1.14.1 Develop warranty management plan to contain information relevant to Warranties.
- 1.14.2 Submit warranty management plan, thirty [30] days before planned pre-warranty conference, to Consultant approval.
- 1.14.3 Warranty management plan to include required actions and documents to assure that Consultant receives warranties to which it is entitled.
- 1.14.4 Provide plan in narrative form and contain sufficient detail to make it suitable for use by future maintenance and repair personnel.
- 1.14.5 Submit, warranty information made available during construction phase, to Consultant for approval prior to each monthly pay estimate.
- 1.14.6 Assemble approved information in binder, submit upon acceptance of work and organize binder as follows:
- 1.14.7 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
- 1.14.8 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
- 1.14.9 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within [ten] days after completion of applicable item of work.
- 1.14.10 Verify that documents are in proper form, contain full information, and are notarized.
 - 1.14.10.1 Co-execute submittals when required.
 - 1.14.10.2 Retain warranties and bonds until time specified for submittal.
- 1.14.11 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.
- 1.14.12 Include information contained in warranty management plan as follows:
 - 1.14.12.1 Roles and responsibilities of personnel associated with warranty process, including points of contact and telephone numbers within the organizations of Contractors, subcontractors, manufacturers or suppliers involved.

- 1.14.12.2 Listing and status of delivery of Certificates of Warranty for extended warranty items, to include roofs, motors, pumps, HVAC balancing, fire protection, sprinkler systems,
- 1.14.12.3 Provide list for each warranted equipment, item, feature of construction or system indicating:
 - 1.14.12.3.1 Name of item.
 - 1.14.12.3.2 Model and serial numbers.
 - 1.14.12.3.3 Location where installed.
 - 1.14.12.3.4 Name and phone numbers of manufacturers or suppliers.
 - 1.14.12.3.5 Names, addresses and telephone numbers of sources of spare parts.
 - 1.14.12.3.6 Warranties and terms of warranty: include one-year overall warranty of construction. Indicate items that have extended warranties and show separate warranty expiration dates.
 - 1.14.12.3.7 Cross-reference to warranty certificates as applicable.
 - 1.14.12.3.8 Starting point and duration of warranty period.
 - 1.14.12.3.9 Summary of maintenance procedures required to continue warranty in force.
 - 1.14.12.3.10 Cross-Reference to specific pertinent Operation and Maintenance manuals.
 - 1.14.12.3.11 Organization, names and phone numbers of persons to call for warranty service.
 - 1.14.12.3.12 Typical response time and repair time expected for various warranted equipment.
- 1.14.12.4 Procedure and status of tagging of equipment covered by extended warranties.
- 1.14.12.5 Post copies of instructions near selected pieces of equipment where operation is critical for warranty and/or safety reasons.
- 1.14.13 Respond in timely manner to oral or written notification of required construction warranty repair work.
- 1.14.14 Written verification to follow oral instructions.
 - 1.14.14.1 Failure to respond will be cause for the Consultant to proceed with action against Contractor.

1.15 Warranty Tags

- 1.15.1 Tag, at time of installation, each warranted item. Provide durable, oil and water resistant tag approved by Consultant.

- 1.15.2 Attach tags with copper wire and spray with waterproof silicone coating.
- 1.15.3 Leave date of acceptance until project is accepted for occupancy.
- 1.15.4 Indicate following information on tag:
 - 1.15.4.1 Type of product/material.
 - 1.15.4.2 Model number.
 - 1.15.4.3 Serial number.
 - 1.15.4.4 Contract number.
 - 1.15.4.5 Warranty period.
 - 1.15.4.6 Inspector's signature.
 - 1.15.4.7 Construction Contractor.

2. PRODUCTS

2.1 Not Used

- 2.1.1 Not Used.

3. EXECUTION

3.1 Not Used

- 3.1.1 Not Used.

END OF SECTION

1. GENERAL

1.1 Related Requirements

1.1.1 Section []

1.2 Administrative Requirements

1.2.1 Demonstrate [scheduled] operation and maintenance of equipment and systems to Owner's personnel [two] weeks prior to date of [interim completion] [substantial performance] [final inspection] .

1.2.2 Owner: provide list of personnel to receive instructions, and co-ordinate their attendance at agreed-upon times.

1.2.3 Preparation:

1.2.3.1 Verify conditions for demonstration and instructions comply with requirements.

1.2.3.2 Verify designated personnel are present.

1.2.3.3 Ensure equipment has been inspected and put into operation in accordance with Section []

1.2.3.4 Ensure testing, adjusting, and balancing has been performed in accordance with Section 01 91 13- GENERAL COMMISSIONING REQUIREMENTS and equipment and systems are fully operational.

1.2.4 Demonstration and Instructions:

1.2.4.1 Demonstrate start-up, operation, control, adjustment, trouble-shooting, at the agreed upon scheduled location

1.2.4.2 Instruct personnel in phases of operation and maintenance using operation and maintenance manuals as basis of instruction.

1.2.4.3 Review contents of manual in detail to explain aspects of operation and maintenance.

1.2.4.4 Prepare and insert additional data in operations and maintenance manuals when needed during instructions.

1.2.5 Time Allocated for Instructions: ensure amount of time required for instruction of each item of equipment or system.

1.3 Action And Informational Submittals

1.3.1 Provide submittals in accordance with Section [01 33 00- Submittal Procedures] .

1.3.2 Submit schedule of time and date for demonstration of each item of equipment and each system [two weeks] prior to designated dates, for Consultant's approval.

- 1.3.3 Submit reports within [one week] after completion of demonstration, that demonstration and instructions have been satisfactorily completed.
- 1.3.4 Give time and date of each demonstration, with list of persons present.
- 1.3.5 Provide copies of completed operation and maintenance manuals for use in demonstrations and instructions.

1.4 Quality Assurance

- 1.4.1 When specified in individual Sections requiring manufacturer to provide authorized representative to demonstrate operation of equipment and systems:
 - 1.4.1.1 Instruct Owner's personnel.
 - 1.4.1.2 Provide written report that demonstration and instructions have been completed.

2. PRODUCTS

2.1 Not Used

- 2.1.1 Not Used.

3. EXECUTION

3.1 Not Used

- 3.1.1 Not Used.

END OF SECTION

1. **GENERAL**

1.1 **Summary**

- 1.1.1 This Section includes the following:
 - 1.1.1.1 Demolition and removal of selected portions of interior building components and finishes.
 - 1.1.1.2 Repair procedures for selective demolition operations.
- 1.1.2 This section does not include the following:
 - 1.1.2.1 Removal of hazardous materials or asbestos abatement.
 - 1.1.2.2 Mechanical or electrical equipment, except as required to make minor modifications to allow the work to be completed.
- 1.1.3 Drawings contain details that suggest directions for solving some of the major demolition and removal requirements for this project; [Contractor] is required to develop these details further by submitting a demolition plan prepared by a professional engineer employed by the [Contractor] .

1.2 **Related Requirements**

- 1.2.1 Section 02 41 13 - Selective Site Demolition
- 1.2.2 Section 02 41 19.13- Selective Building Demolition
- 1.2.3 Section 02 81 01- Hazardous Substances
- 1.2.4 Section 09 21 16 - Gypsum Board Assemblies
- 1.2.5 Section 09 30 13- Ceramic Tiling
- 1.2.6 Section 09 51 00- Acoustical Panel Ceilings
- 1.2.7 Section 09 65 19- Resilient Tile Flooring
- 1.2.8 Section 22 05 05– Selective Demolition for Plumbing
- 1.2.9 Section 23 05 05– Selective Demolition for HVAC
- 1.2.10 Section 26 05 05– Selective Demolition for Electrical

1.3 **Reference Standards**

- 1.3.1 American National Standards Institute (ANSI)
 - 1.3.1.1 ANSI A10.8 2011, Safety Requirements for Scaffolding
- 1.3.2 American Society for Testing and Materials (ASTM):
 - 1.3.2.1 ASTM C475/C475M-15, Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board
- 1.3.3 Canadian Green Building Council (CaGBC)
- 1.3.4 CSA Group (CSA)

- 1.3.4.1 CSA S350 M1980 (R2003), Code of Practice for Safety in Demolition of Structures
- 1.3.5 Department of Justice Canada (Jus)
 - 1.3.5.1 Canadian Environmental Assessment Act (CEAA), 2012
 - 1.3.5.2 Canadian Environmental Protection Act (CEPA), 2012
 - 1.3.5.2.1 SOR/2003-2, On-Road Vehicle and Engine Emission Regulations
 - 1.3.5.2.2 SOR/2006-268, Regulations Amending the On-Road Vehicle and Engine Emission Regulations
 - 1.3.5.2.3 Transportation of Dangerous Goods Act (TDGA), 1992, c. 34
 - 1.3.5.2.4 Motor Vehicle Safety Act (MVSA), 1995
 - 1.3.5.2.5 Hazardous Materials Information Review Act, 1985
- 1.3.6 National Fire Protection Association (NFPA)
 - 1.3.6.1 NFPA 241 13, Standard for Safeguarding Construction, Alteration, and Demolition Operations

1.4 DEFINITIONS

- 1.4.1 Demolish: Detach items from existing construction and legally dispose of them off site, unless indicated to be removed and salvaged or removed and reinstalled.
- 1.4.2 Remove and Salvage: Detach items from existing construction and deliver them to Owner ready for reuse .
- 1.4.3 Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.
- 1.4.4 Existing to Remain: Existing items of construction that are not removed and that are not otherwise indicated as being removed, removed and salvaged, or removed and reinstalled.
- 1.4.5 Hazardous Substances: Dangerous substances, dangerous goods, hazardous commodities and hazardous products may include asbestos, mercury and lead, PCB's, poisons, corrosive agents, flammable substances, radioactive substances, or other material that can endanger human health or wellbeing or environment if handled improperly as defined by the Federal Hazardous Products Act (RSC 1985) including latest amendments.

1.5 Administrative Requirements

- 1.5.1 Coordination: Coordinate with Owner for the material ownership as follows:

- 1.5.1.1 Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner Representative 's property, demolished materials shall become Contractor 's property and shall be removed from Project site.
- 1.5.1.2 Coordinate selective demolition work so that work of this Section adheres to aesthetic criteria established by the Drawings and specified dimensions with all elements in planes as drawn, maintaining their relationships with all other building elements.
- 1.5.1.3 Historic items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, antiques, and other items of interest or value to [Owner] that may be encountered during selective demolition remain [Owner] 's property:
 - 1.5.1.3.1 Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to [Owner] .
 - 1.5.1.3.2 Coordinate with [Owner] 's [historical adviser] [archaeologist] , who will establish special procedures for removal and salvage.
- 1.5.2 Pre Demolition Meeting: Convene pre-installation meeting [1] week prior to beginning [work of this Section] [on-site installation] , with [Contractor] [Consultant] [Representative] in accordance with [Section 01 31 19- Project Meetings] to:
 - 1.5.2.1 Confirm extent of salvaged and demolished materials
 - 1.5.2.2 Review [Contractor] 's demolition plan
 - 1.5.2.2.1 Verify existing site conditions adjacent to demolition work
 - 1.5.2.2.2 Coordination with other construction sub trades
- 1.5.3 Hold project meetings every [week] [month] .
- 1.5.4 Ensure [project manager] [key personnel] [subcontractor representatives] [site supervisor] [WMC] attend.
- 1.5.5 [WMC] must provide [written] [verbal] report on status of waste diversion activity at each meeting.
- 1.5.6 [Consultant] [Representative] will provide [written] [verbal] notification of change to meeting schedule established upon contract award [24] hours prior to scheduled meeting.

1.6 **Action And Information Submittals**

- 1.6.1 Action Submittals: Provide the following submittals before starting any work of this Section:

- 1.6.1.1 Schedule of Selective Demolition Activities: Coordinate with Section 01 32 16.16– Construction Progress Schedule - Critical Path Method (CPM), and indicate the following:
 - 1.6.1.1.1 Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity.
 - 1.6.1.1.2 Coordinate with [Owner] [Representative] 's [building manager] [user group] ongoing site operations, and limit the number of interruptions during regular business hours.
 - 1.6.1.1.3 Interruption of utility services.
 - 1.6.1.1.4 Coordination for shutoff, capping, and continuation of utility services.
 - 1.6.1.1.5 Use of elevator and stairs.
 - 1.6.1.1.6 Locations of temporary partitions and means of egress, [including for others affected by selective demolition operations].
 - 1.6.1.1.7 Coordination with [Representative] [Owner] 's continuing occupancy of portions of existing building [and of [Owner] [Representative] 's partial occupancy of completed Work]
- 1.6.1.2 Demolition Plan: Submit a plan of demolition area indicating extent of temporary facilities and supports, methods of removal and demolition prepared by a professional engineer in accordance with requirements of Authority Having Jurisdiction, and as follows:
 - 1.6.1.2.1 Proposed [Noise Control] [Dust Control] Measures: Submit statement or drawing that indicates the measures proposed for use, proposed locations, and proposed time frame for their operation. [Representative] [Consultant] reserves the right to make modifications where proposed methods interfere with the [Representative] [Owner] 's ongoing operation
 - 1.6.1.2.2 Inventory: Submit a list of items that have been removed and salvaged after selective demolition is complete.
 - 1.6.1.2.3 Landfill Records: Indicate receipt and acceptance of [hazardous wastes by a landfill facility licensed to accept hazardous wastes] .
 - 1.6.1.2.4 Pre demolition [Videotape] [Photographs] : Submit [photographs] [videotape] indicating existing conditions of adjoining construction

and site improvements prior to starting Work. Include finish surfaces that may be misconstrued as damage caused by selective demolition operations.

1.6.2 Informational Submittals: Provide the following submittals when requested by the [Representative] [Consultant] :

1.6.2.1 Qualification Data: Submit information for companies and personnel indicating their capabilities and experience to perform work of this Section including; but not limited to, lists of completed projects with project names and addresses, names and addresses of architects and owners, for work of similar complexity and extent.

1.7 Quality Assurance

1.7.1 Regulatory Requirements: Perform work as follows; use most restrictive requirements where differences occur between the municipal, provincial and federal jurisdictions:

1.7.1.1 Provincial and Federal Requirements: Perform work in accordance with governing environmental notification requirements and regulations of the Authority Having Jurisdiction.

1.7.1.2 Municipal Requirements: Perform hauling and disposal operations in accordance with regulations of Authority Having Jurisdiction.

1.7.2 Qualifications: Provide proof of qualifications when requested by [Representative] [Consultant] :

1.7.2.1 Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project:

1.7.2.1.1 Conform to the [provincial] Occupational Health and Safety Act and Regulation.

1.7.2.1.2 Conform to Workers' Compensation Board Regulations.

1.7.2.1.3 Conform to City of [local municipal] bylaws and regulations governing this type of work.

1.8 Site Conditions

1.8.1 [Representative] [Owner] will occupy portions of building immediately adjacent to selective demolition area:

1.8.1.1 Conduct selective demolition so that [Representative] [Owner] 's operations will not be disrupted.

1.8.1.2 Provide not less than [72 hours] notice to [Owner] [Representative] of activities that will affect [Representative] [Owner] 's operations.

- 1.8.2 Maintain access to existing means of egress, walkways, corridors, exits, and other adjacent occupied or used facilities in accordance with Section 01 35 16:
 - 1.8.2.1 Do not close or obstruct means of egress, walkways, corridors, exits, or other occupied or used facilities without written acceptance from authorities having jurisdiction.
- 1.8.3 [Representative] [Owner] assumes no responsibility for condition of areas to be selectively demolished:
 - 1.8.3.1 Conditions existing at time of Pre Bid Site Review will be maintained by [Owner] [Representative] as far as practical.
 - 1.8.3.2 [Representative] [Owner] will remove the following items prior to selective demolition:
- 1.8.4 Discovery of Hazardous Substances: It is not expected that Hazardous Substances will be encountered in the Work; immediately notify [Representative] [Consultant] if materials suspected of containing hazardous substances are encountered and perform the following activities:
 - 1.8.4.1 Refer to Section 01 41 00– Regulatory Requirements for directives associated with specific material types.
 - 1.8.4.2 Hazardous materials will be as defined in the Hazardous Materials Act.
 - 1.8.4.3 Hazardous materials will be removed by [Owner] [Representative] before start of the Work.
 - 1.8.4.4 If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify [Representative] [Owner] . Hazardous materials will be removed by [Owner] [Representative] under a separate contract or as a change to the Work.
- 1.8.5 Hazardous Substances: Hazardous Substances are present in building to be selectively demolished. A report on the presence of Hazardous Substances is [attached as an information document to this Section] [available at the [Representative] [Consultant] 's offices] for review and use:
 - 1.8.5.1 Examine report to become aware of locations where hazardous materials are present.
 - 1.8.5.2 Coordinate with Section 02 81 01.
 - 1.8.5.3 Do not disturb Hazardous Substances or items suspected of containing Hazardous Substances.

2. PRODUCTS

2.1 Temporary Support Structures

- 2.1.1 Design temporary support structures required for demolition work and underpinning and other foundation supports necessary for the project

using a qualified professional engineer registered or licensed in province of the Work.

2.2 Description

- 2.2.1 This section of the Work includes, but is not necessarily limited to, the following:
 - 2.2.1.1 Demolition, removal completely from site, and disposal of all identified components, materials, equipment and debris
 - 2.2.1.2 Selective demolition to allow new walls, bulkheads, ceilings and other materials to meet existing construction as indicated
 - 2.2.1.3 All material from demolition shall be removed from site immediately with no salvage, selling, sorting or burning permitted on site
 - 2.2.1.4 Retain items indicated on drawings for re use in new construction

2.3 Debris

- 2.3.1 Make all arrangements for transport and disposal of all demolished materials from the site.

2.4 Equipment

- 2.4.1 Provide all equipment required for safe and proper demolition of the building interiors indicated.

2.5 Repair Materials

- 2.5.1 Use repair materials identical to existing materials:
 - 2.5.1.1 If identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
 - 2.5.1.2 Use a material whose installed performance equals or surpasses that of existing material.
 - 2.5.1.3 Comply with material and installation requirements specified in individual Specification Sections.
- 2.5.2 Floor Patching and Levelling Compounds: Cement based, trowelable, self levelling compounds compatible with specified floor finishes; gypsum based products are not acceptable for work of this Section.
- 2.5.3 Concrete Unit Masonry: Lightweight concrete masonry units, and mortar, cut and trimmed to fit existing opening to be filled. Provide standard hollow core units, square end units and bond beam units as indicated on drawings.

- 2.5.4 Prefinished Sheet Steel: Prefinished sheet steel, colour to match existing radiation cabinets, bent and profiled to match existing radiation cabinets.
- 2.5.5 Gypsum Board Patching Compounds: Joint compound to ASTM C475/C475M, bedding and finishing types thinned to provide skim coat consistency to patch and prepare existing gypsum board walls ready for new finishes in accordance with Section 09 21 16 – Gypsum Board Systems.
- 2.5.6 Hoarding and Dust Screens: Refer to Section 01 50 00 for stud framing and gypsum board sheathing materials.

2.6 Existing Materials

- 2.6.1 Items to be retained for re use in new construction include, but are not limited to the following:
 - 2.6.1.1 [Lockers and cabinets]
 - 2.6.1.2 [Ceiling components]
 - 2.6.1.3 [Paper towel dispensers and other miscellaneous items identified on drawings]
 - 2.6.1.4 Furniture as directed.
 - 2.6.1.5 AV equipment as directed.
 - 2.6.1.6 [Vertical blind vanes, and curtains and tracks]
 - 2.6.1.7 Confirm with [Consultant] [Representative] any materials that appear to be in re usable condition prior to disposal.
 - 2.6.1.8 Confirm with [Representative] [Consultant] any materials scheduled for re use that are not in re usable condition prior to installation.

3. EXECUTION

3.1 Examination

- 3.1.1 Verify that utilities have been disconnected and capped.
- 3.1.2 Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- 3.1.3 Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
- 3.1.4 Notify the Representative Consultant where existing mechanical, electrical, or structural elements conflict with intended function or design:
 - 3.1.4.1 Investigate and measure the nature and extent of conflict and submit a written report to Representative Consultant.
 - 3.1.4.2 Representative Consultant will issue additional instructions or revise drawings as required to correct conflict.

- 3.1.5 Perform surveys as the work progresses to detect hazards resulting from selective demolition activities.

3.2 Utility Services

- 3.2.1 Coordinate existing services indicated to remain and protect them against damage during selective demolition operations in accordance with Section 01 35 16.
- 3.2.2 Locate, identify, disconnect, and seal or cap off indicated utilities serving areas to be selectively demolished.
 - 3.2.2.1 Arrange to shut off affected utilities with utility companies.
 - 3.2.2.2 If utility services are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary utilities that bypass area of selective demolition and that maintain continuity of service to other parts of building.
 - 3.2.2.3 Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.
 - 3.2.2.4 Cut off pipe or conduit to a minimum of 25 mm below slab, and remove concrete mound. [Patch concrete using cementitious grout] .
- 3.2.3 Coordinate with Mechanical and Electrical Divisions for shutting off, disconnecting, removing, and sealing or capping utilities.
- 3.2.4 Do not start selective demolition work until utility disconnecting and sealing have been completed and verified in writing.

3.3 Preparation

- 3.3.1 Identify and mark all equipment and materials identified to be retained by [Owner] [Representative] or to be re used in subsequent construction. Separate and store items to be retained in an area away from area of demolition and protect from accidental disposal.
- 3.3.2 Post warning signs on electrical lines and equipment that must remain energized to serve other areas during period of demolition.
- 3.3.3 Confirm that all electrical and telephone service lines entering buildings are not disconnected.
- 3.3.4 Do not disrupt active or energized utilities crossing the demolition site.
- 3.3.5 Provide and maintain barricades, warning signs, protection for workmen and the public during the full extent of the Work. Read drawings carefully to ascertain extent of protection required.
- 3.3.6 Mark all materials required to be re used, store in a safe place until ready for re installation.

- 3.3.7 Adjust all junction boxes, receptacles and switch boxes flush with new wall construction where additional layers to existing construction are indicated.
- 3.3.8 Remove permanent marker lines used or found on exposed surfaces and at surfaces indicated for subsequent finish materials.
Mechanically remove permanent marker lines and associated substrates where permanent marker lines occur and patch surface.
Sealing or priming over permanent marker lines is not acceptable.

3.4 Concrete Slab Reinforcing

- 3.4.1 Locate location of reinforcing steel in concrete slabs prior to cutting or coring using non destructive, non ionizing radio frequency locators.
- 3.4.2 Core concrete slabs to avoid reinforcing steel, electrical conduit or water pipes; adjust core location and coordinate with Engineer where slab features interfere with core drilling.
- 3.4.3 Notify the Engineer immediately for further instructions where coring or cutting will damage existing slab features.

3.5 Selective Demolition

- 3.5.1 Demolish and dismantle work in a neat and orderly manner and in strict accordance with all regulations.
- 3.5.2 At end of each day's work, leave Work in safe condition so that no part is in danger of toppling or falling.
- 3.5.3 Demolish in a manner to minimize dusting and to prevent migration of dust.
- 3.5.4 Selling or burning of materials on the site is not permitted.
- 3.5.5 Remove concrete bases by cutting and chipping, take precautions against slab cracking and degradation. Grind edges smooth, fill and make level with self levelling grout.
- 3.5.6 Fill all openings in concrete block walls with concrete masonry units, coursing to match existing, prepare ready to receive new finishes to match existing.
 - 3.5.6.1 Provide bond beams in new openings cut into existing concrete masonry unit walls.
 - 3.5.6.2 Provide finished end masonry units to patch and repair for new jamb sections in existing concrete masonry unit walls.
- 3.5.7 Fill all openings in gypsum board walls with gypsum board and steel framing to match existing, skim coat to make wall smooth and even.
- 3.5.8 Demolish existing carpet, resilient flooring and adhesive remnants as follows:
 - 3.5.8.1 Vacuum existing carpet thoroughly, prior to removal, using vacuum equipped with power head/sweeper.

- 3.5.8.2 Apply fine mist water spray to carpet as required to minimize dust generation during removal. Avoid spraying near electrical outlets.
- 3.5.8.3 Demolish existing carpet and resilient floor finishes, remove and dispose of off site.
- 3.5.8.4 Remove adhesive to the greatest extent possible using scrapping tools and as follows:
 - 3.5.8.4.1 Do not use solvent based cleaners to remove adhesive remnants.
 - 3.5.8.4.2 Lightly shot blast or grind floor using machine designed for purpose to remove adhesive remnants.
 - 3.5.8.4.3 Vacuum floor ready for application of skim coating.
 - 3.5.8.4.4 Repair all slab depressions and damage with cementitious patching compound.
 - 3.5.8.4.5 Skim coat floor with minimum 1 mm thick cementitious floor underlayment compatible with new flooring materials.
- 3.5.8.5 Floor substrate shall be smooth, free from ridges and depressions, and adhesive remnants that could telegraph through resilient flooring materials and carpets.
- 3.5.8.6 Recycle materials in accordance with Section 01 74 19 – Waste Management and Disposal.
- 3.5.9 Demolish existing ceramic tile finishes. Remove setting bed or adhesive to the greatest extent possible using mechanical scrapping tools and as follows:
 - 3.5.9.1 Saw cut edge of tile for clean and even transition joint between existing tile to remain and new flooring materials
 - 3.5.9.2 Lightly shot blast or grind floor to remove remnants of setting materials
 - 3.5.9.3 Vacuum floor ready for application of skim coating
 - 3.5.9.4 Repair all slab depressions and damage with cementitious patching compound. Skim coat floor with minimum 1 mm thick cementitious floor underlayment compatible with new flooring materials
- 3.5.10 Demolish completely all ceiling panels and grid as indicated.
- 3.5.11 Remove all wall coverings scheduled for demolition. Patch and repair wall surfaces with skim coat of gypsum board joint compound leaving wall surfaces smooth and even ready for new wall finishes.
- 3.5.12 Patch and repair all walls, floor and ceilings damaged during demolition with material matching adjacent walls, prepare ready for new finishes.

- 3.5.13 Patch and repair all radiation cabinets, mechanical equipment and electrical fixtures damaged or exposed during demolition to match adjacent finished surfaces.
- 3.5.14 **Existing Office Furniture** – All existing office furniture to be removed and disposed of shall be done by a specialist company, specializing in furniture removal.

3.6 **Patching and Repairing**

- 3.6.1 Floors and Walls:
 - 3.6.1.1 Where walls or partitions that are demolished extend from one finished area into another, patch and repair floor and wall surfaces in the new space.
 - 3.6.1.2 Provide a level and smooth surface having uniform finish colour, texture, and appearance.
 - 3.6.1.3 Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform colour and appearance.
 - 3.6.1.4 Patch with durable seams that are as invisible as possible.
 - 3.6.1.5 Provide materials and comply with installation requirements specified in other Sections of these Specifications.
 - 3.6.1.6 Where patching occurs in a painted surface, apply primer and intermediate paint coats over patch and apply final paint coat over entire unbroken surface containing patch. Provide additional coats until patch blends with adjacent surfaces.
 - 3.6.1.7 Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
- 3.6.2 Ceilings: patch, repair, or re hang existing ceilings as necessary to provide an even plane surface of uniform appearance.

3.7 **Protection**

- 3.7.1 Prevent debris from blocking drainage inlets and systems and ground draining, and protect material and electrical systems and services that must remain in operation.
- 3.7.2 Arrange demolition and shoring work so that interference with the use of adjoining areas by the [Representative] [Owner] and users is minimized.
- 3.7.3 Maintain safe access to and egress from occupied areas adjoining.
- 3.7.4 Provide and maintain fire prevention equipment and alarms accessible during demolition.

3.8 Cleaning

- 3.8.1 Develop [Construction Waste Management Plan] related to Work of this Section and in accordance with [Section 01 74 19– Waste Management and Disposal] .
- 3.8.2 Waste Management: Separate waste materials for [reuse] [recycling] in accordance with [Section 01 74 19- Waste Management and Disposal] , and as follows:
 - 3.8.2.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.
- 3.8.3 Divert excess materials from landfill to site approved by Owner
- 3.8.4 Promptly as the Work progresses, and on completion, clean up and remove from the site all rubbish and surplus material. Remove rubbish resulting from demolition work daily.
- 3.8.5 Maintain access to exits clean and free of obstruction during removal of debris.
- 3.8.6 Keep surrounding and adjoining roads, lanes, sidewalks, municipal rights of way clean and free of dirt, soil or debris that may be a hazard to vehicles or persons.
- 3.8.7 Transport material designated for alternate disposal using approved facilities in accordance with applicable regulations.
- 3.8.8 Dispose of materials not designated for alternate disposal in accordance with applicable regulations.
 - 3.8.8.1 Disposal facilities must be those approved by Owner .

END OF SECTION

1. GENERAL

1.1 Summary

- 1.1.1 This Section includes requirements for careful removal and salvage, and reconditioning of building components identified [for storage on site] [and subsequent reinstallation forming a part of Project] [ready for re use at a later date] [for storage at a designated remote site] .

1.2 Related Requirements

- 1.2.1 [Section 02 41 19.16– Selective Interior Demolition]
Existing Office Furniture Removal 3.5.14 [Appendix G]
- 1.2.2 [Section 22 05 05– Selective Demolition for Plumbing]
- 1.2.3 [Section 23 05 05– Selective Demolition for HVAC]
- 1.2.4 [Section 26 05 05– Selective Demolition for Electrical]

1.3 Definitions

- 1.3.1 Remove and Salvage: Detach items from existing construction and deliver them to [ready for reuse] [Representative] [Owner] .
- 1.3.2 Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.

1.4 Administrative Requirements

- 1.4.1 Coordination Existing Salvaged Work: Coordinate with [Owner] [Representative] for confirmation of materials, components, and items of equipment identified for removal and salvage from their present existing locations and as follows:
- 1.4.1.1 Items that are turned over to [Owner] [Representative] .
- 1.4.1.2 [On-site] [Off site] storage locations.
- 1.4.1.3 Confirmation of items that are renovated or refurbished ready for reinstallation as a part of Work.
- 1.4.1.4 Confirmation of items that [Owner] [Representative] will not re use, but will retain as follows:
- 1.4.1.4.1 Transport identified salvaged items to Owner's designated storage facility.
- 1.4.1.4.2 Constructor is responsible for loading and handling identified salvaged items using their own forces and equipment.

2. PRODUCTS

2.1 Salvaged Items

- 2.1.1 Refer to drawings

- 2.1.2 Confirm with Owner additional items that appear salvageable prior to disposal.

3. **EXECUTION**

3.1 **Salvage**

- 3.1.1 Remove and handle salvageable items from site to minimize damage and to ensure that usability is maintained.
- 3.1.2 Clean, decontaminate, or remediate hazardous substances (lead based paint, asbestos dust, PCB residue, and similar substances) from salvaged materials so they are safe for reuse [or resale] .
- 3.1.3 Place materials on pallets or wrap in protective film to ensure that loose pieces and projections do not cause injury to personnel, and that salvaged items remain as complete units.
- 3.1.4 Clean items of construction or building debris, or materials that are not a part of salvaged work before delivering to Owner .

END OF SECTION

1. GENERAL

1.1 Related Requirements

- 1.1.1 [Section 07 92 00- Joint Sealants: Sealant materials and application] .
- 1.1.2 [Section 09 91 23- Interior Painting: Site finishing materials and application] .

1.2 Reference Standards

- 1.2.1 American National Standards Institute (ANSI)
 - 1.2.1.1 ANSI/ASME 18.6.1 [1981 (R2012)] Wood Screws (Inch Series).
 - 1.2.1.2 ANSI/BHMA A156.9-[2010] , Cabinet Hardware.
 - 1.2.1.3 ANSI/BHMA A156.11-[2014] , Cabinet Locks.
 - 1.2.1.4 ANSI/BHMA A156.16-[2013] , Auxiliary Hardware.
 - 1.2.1.5 ANSI/BHMA A156.18-[2012] , Materials and Finishes.
 - 1.2.1.6 ANSI/BHMA A156.20-[2006] , Strap and Tee Hinges and Hasps.
 - 1.2.1.7 ANSI A208.1-[09] , Particleboard.
 - 1.2.1.8 ANSI A208.2-[09] , Medium Density Fiberboard (MDF) for Interior Applications.
 - 1.2.1.9 ANSI/HPVA HP-1-[10] , Standard for Hardwood and Decorative Plywood.
- 1.2.2 Architectural Woodwork Manufacturers Association of Canada (AWMAC)
 - 1.2.2.1 Architectural Woodwork Standards (AWMAC AWS), [2014].
- 1.2.3 ASTM International
 - 1.2.3.1 ASTM A 153/A 153M-[16] , Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
 - 1.2.3.2 ASTM E 1333-[14] , Standard Test Method for Determining Formaldehyde Concentrations in Air and Emission Rates From Wood Products Using a Large Chamber.
 - 1.2.3.3 ASTM F1667-[13] Standard Specification for Driven Fasteners: Nails, Spikes and Staples.
- 1.2.4 Canadian General Standards Board (CGSB)
 - 1.2.4.1 CAN/CGSB-11.3-[M87] , Hardboard.
 - 1.2.4.2 CAN/CGSB-71.20-[M88] , Adhesive, Contact, Brushable.
 - 1.2.4.3 CAN/CGSB-71.19-[M88] , Adhesive, Contact, Sprayable.
- 1.2.5 CSA Group (CSA)

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- 1.2.5.1 CSA O112-M Series [1977 (R2006)] Standards for Wood Adhesives.
- 1.2.5.2 CSA O121-[08(R2013)] , Douglas Fir Plywood.
- 1.2.5.3 CSA O141-[05 (R2014)] , Softwood Lumber.
- 1.2.5.4 CSA O151-[14] , Canadian Softwood Plywood.
- 1.2.5.5 CSA O153-[M1980 (R2014)] , Poplar Plywood.
- 1.2.5.6 CAN/CSA-Z809-[08(R2013)] , Sustainable Forest Management.
- 1.2.6 Forest Stewardship Council (FSC)
 - 1.2.6.1 FSC-STD-01-001-[2004] , FSC Principle and Criteria for Forest Stewardship.
- 1.2.7 Green Seal Environmental Standards (GS)
 - 1.2.7.1 GS-11-[2015] , Paints, Coatings, Stains and Sealers.
 - 1.2.7.2 GS-36-[2013] , Adhesives for Commercial Use.
- 1.2.8 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - 1.2.8.1 Material Safety Data Sheets (MSDS).
- 1.2.9 National Electrical Manufacturers Association (NEMA)
 - 1.2.9.1 ANSI/NEMA LD-3-[05] , High-Pressure Decorative Laminates (HPDL).
 - 1.2.9.2 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
 - 1.2.9.3 SCAQMD Rule 1113-[A2011] , Architectural Coatings.
 - 1.2.9.4 SCAQMD Rule 1168-[A2005] , Adhesives and Sealants Applications.
- 1.2.10 Sustainable Forestry Initiative (SFI)
 - 1.2.10.1 SFI-[2015-2019] Standard and Rules.

1.3 Pre-Installation Meeting

- 1.3.1 Prior to enclosing framing, convene a meeting of contractor, casework fabricator, casework installer, framing subcontractor [and Consultant] .
 - 1.3.1.1 Review locations of backing required for casework installation as shown on shop drawings and as necessary for installation.
 - 1.3.1.2 Review method of attachment for backing to wall system.
 - 1.3.1.3 Review coordination with other affected sections.

1.4 Action And Informational Submittals

- 1.4.1 Submit in accordance with Section [01 33 00- Submittal Procedures] .
- 1.4.2 Product Data:

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- 1.4.2.1 Prepare and submit material list in accordance with AWMAC AWS, cross-referenced to specifications.
- 1.4.2.2 Include manufacturer's instructions, printed product literature, data sheets and catalogue pages for all materials and products to be incorporated into architectural wood casework and include product characteristics, performance criteria, dimensions and profiles, finish and limitations on use.
- 1.4.2.3 Submit [two] copies of WHMIS MSDS in accordance with Section [01 35 43- Environmental Procedures] [01 35 29.06- Health and Safety Requirements] .
- 1.4.3 Hardware List:
 - 1.4.3.1 Submit hardware list cross-referenced to specifications.
 - 1.4.3.2 Include manufacturer's specification sheets indicating name, model, material, function, finish, BHMA designations and other pertinent information.
- 1.4.4 Shop Drawings:
 - 1.4.4.1 Prepare and submit shop drawings in accordance with AWMAC AWS and as follows.
 - 1.4.4.2 Submit [two] sets of shop drawings for initial review in accordance with requirements of Division 01. Revise as directed, submit for final acceptance and distribution.
 - 1.4.4.3 Indicate details of construction, profiles, jointing, fastening and other related details.
 - 1.4.4.3.1 Scales: profiles, details half full size.
 - 1.4.4.4 Indicate materials, thicknesses, finishes and hardware.
 - 1.4.4.5 Indicate locations of service outlets in casework, [typical and special installation conditions] , and connections, attachments, anchorage and location of exposed fastenings.
 - 1.4.4.6 Show location on casework elevations of backing required in supporting structure for attachment of casework.
 - 1.4.4.7 Indicate AWMAC AWS quality grade where different from predominant grade specified.
 - 1.4.4.8 Include color schedule of all casework items, including all countertop, exposed, and semi-exposed cabinet finishes, finish material manufacturer, pattern, and color.
 - 1.4.4.9 Submit drawings stamped and signed by professional engineer registered or licensed in Ontario, Canada, for the following items.
 - 1.4.4.9.1 Handrails and guards
 - 1.4.4.9.2 Staircases
- 1.4.5 Samples:

- 1.4.5.1 Prepare and submit samples in accordance with AWMAC AWS and as follows.
- 1.4.5.2 Apply sample finishes to specified substrate or core material minimum 300 x 300 mm to match designer sample. For veneers with transparent finish submit three samples to illustrate range and colour of grain expected.
- 1.4.5.3 Shop applied coatings:
 - 1.4.5.3.1 For transparent finish, submit [triplicate] samples of each species and cut of wood to be used, finished [as specified].
 - 1.4.5.3.2 For opaque finish, submit [triplicate] samples for each colour selection, finished [as specified] .
- 1.4.5.4 Submit duplicate samples of laminated plastic for each specified colour selection.
- 1.4.5.5 Submit duplicate samples of laminated plastic joints, edging, cutouts and post-formed profiles.
- 1.4.5.6 [Furnish [four] samples of each lumber and composite panel material to Contractor for preparation of field applied finish samples in accordance with Section 09 91 23 Interior Painting] .
- 1.4.5.7 Certifications: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
- 1.4.5.8 Submit statement of experience and qualifications of architectural wood casework fabricator.

1.5 Quality Assurance

- 1.5.1 Perform Work of this Section by single architectural wood casework fabricator with minimum 5 years of current architectural casework production experience and having completed minimum one project in the past 5 years with value within 20% of the cost of the work of this Section.
- 1.5.2 Independent inspection/testing agency may be engaged by Engineer, Consultant for purpose of inspecting and/or testing Work of this Section.
 - 1.5.2.1 Cost of inspection and testing services will be borne by Engineer, Consultant.
 - 1.5.2.2 Costs of inspection and testing services will be paid in accordance with [Section 01 21 00 Allowances] .
- 1.5.3 Mock-ups:
 - 1.5.3.1 Construct mock-ups in accordance with Section [01 45 00-Quality Control] .

- 1.5.3.2 Shop prepare one [shelving unit] [convactor cabinet] [counter top] [base cabinet unit] [wall cabinet] , complete with hardware [shop applied finishes] , and install where directed by Consultant.
- 1.5.3.3 Allow [24] hours for inspection of mock-up by Consultant before proceeding with Work.
- 1.5.3.4 When accepted, mock-up will demonstrate minimum standard for Work.
- 1.5.3.5 Do not proceed with work prior to receipt of written acceptance of mock-up by Consultant.
- 1.5.3.6 Accepted mock-up may [not] remain as part of finished work.

1.6 Delivery, Storage And Handling

- 1.6.1 Deliver, store and handle materials in accordance with Section [01 61 00- Common Product Requirements] [with manufacturer's written instructions] .
- 1.6.2 Deliver wood casework only when area of work is enclosed, plaster and concrete work is dry, and area is broom clean and site environmental conditions are acceptable for installation.
- 1.6.3 Protect millwork against dampness and damage during and after delivery.
- 1.6.4 Store millwork in ventilated areas, protected from extreme changes of temperature and humidity, and within range recommended by AWMAC AWS for location of project.
- 1.6.5 Store materials [indoors] [in dry location] in clean, dry, well-ventilated area.
- 1.6.6 Protect architectural woodwork and hardware from nicks, scratches, and blemishes.
- 1.6.7 Replace defective or damaged materials with new.
- 1.6.8 Waste Management: for packaging and materials, in accordance with [Section 01 74 19- Waste Management and Disposal]

2. PRODUCTS

2.1 Sustainability Characteristics

- 2.1.1 Lumber, plywood and composite wood products to be CAN/CSA-Z809 or FSC or SFI certified.
- 2.1.2 Composite wood products: [formaldehyde emissions within the following limits when tested in accordance with ASTM E1333] [contain no added formaldehyde] .
 - 2.1.2.1 Hardwood plywood with veneer core (HWPW-VC): [0.05 ppm] .

- 2.1.2.2 Hardwood plywood with composite core (HWPW-CC): [0.05 ppm] .
- 2.1.2.3 Particleboard (PB): [0.09 ppm] .
- 2.1.2.4 Medium density fibreboard (MDF): [0.11 ppm] .
- 2.1.2.5 Thin (less than 8 mm) medium density fibreboard (tMDF): [0.13 ppm] .

2.1.3 Recycled content:

- 2.1.3.1 Fibreboard must contain less than [10] % roundwood by weight, using weighted average over three month period at manufacturing locations.
- 2.1.3.2 Lumber: [recovered] [salvaged] lumber

2.1.4 Adhesives: VOC limit [120] [30] g/L maximum to [GS-36] [SCAQMD Rule 1168] .

2.1.5 Coatings

- 2.1.5.1 Clear Wood Finishes: VOC limit [350] [550] g/L maximum to [SCAQMD Rule 1113] [GS-11] .
- 2.1.5.2 Paints: VOC limit [50] [100] g/L maximum to [GS-11] [SCAQMD Rule 1113] .

2.2 Quality Grade

2.2.1 Provide all materials and perform all fabrication in accordance with AWMAC AWS Custom Grade and as follows, except where specified otherwise:

- 2.2.1.1 Economy Grade: [storage areas] [janitor's closets] [mechanical rooms and utility areas] .

2.2.2 In case of conflict between Contract Documents and AWMAC AWS grade requirements, Contract Documents govern.

2.3 Lumber

2.3.1 Softwood and Hardwood Lumber: Sound lumber to specified AWMAC AWS quality grade requirements, kiln-dried to moisture content recommended by AWMAC AWS for location of the Work.

2.3.2 Machine stress-rated lumber is acceptable for all purposes.

2.3.3 Face framing, pulls, trims, molding, edge-banding, [stiles and rails] : as indicated on drawings.

2.4 Panel Materials

2.4.1 Interior mat-formed wood particleboard: to ANSI/NPA A208.1, industrial grade M-2 or M-3, medium density (640-800 kg/m³), thickness 19 mm unless indicated otherwise.

- 2.4.1.1 Use moisture resistant grade 2-M-2 or 2-M-3 for countertops and splash-backs to receive plumbing fixtures.

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- 2.4.2 MDF (medium density fibreboard) core: to ANSI A208.2, density 769 kg/m³, Grade as indicated on drawings.
 - 2.4.2.1 Use moisture resistant MR grade for countertops and splash-backs to receive plumbing fixtures.
- 2.4.3 Douglas fir plywood (DFP): to CSA O121, standard construction.
- 2.4.4 Hardwood plywood: to [ANSI/HPVA HP-1] [CHPA grading rules] .
- 2.4.5 Canadian softwood plywood (CSP): to CSA O151, standard construction.
- 2.4.6 Poplar plywood (PP): to CSA O153, standard construction.
- 2.4.7 Hardboard: To CAN/CGSB-11.3.

2.5 Decorative Veneer Faced Plywood

- 2.5.1 Decorative hardwood plywood: to specified AWMAC AWS requirements for grade specified for exposed [and semi-exposed] surfaces:
 - 2.5.1.1 Veneer species: as indicated on drawings.
 - 2.5.1.2 Matching: as indicated on drawings.
 - 2.5.1.3 Core: as indicated on drawings.
 - 2.5.1.4 Thickness: as indicated on drawings.
 - 2.5.1.5 Bond: Type II.
 - 2.5.1.6 Sanding: [regular sanding] [no sanding] [touch sanding] .
 - 2.5.1.7 Grain direction: as indicated on drawings.

2.6 Decorative Overlaid Composite Panels

- 2.6.1 Thermally Fused Laminate (TFL): to NEMA LD3 Grade VGL, High wear resistant thermofused melamine: equal or exceed 400 cycles (Minimum standard for HPL abrasion test).
 - 2.6.1.1 Laminate: Decorated paper with melamine or polyester resin, from based on [solid] [metallic] [printed pattern] [woodgrain] , [integral colour throughout] , [multilayered] colour range with [furniture] [gloss] [textured] [matt] [embossed] [satin] finish selected by Consultant from manufacturer's full range.
 - 2.6.1.2 Core: [Particleboard (PD)] [Medium density fibreboard (MDF)] .
- 2.6.2 Rigid thermoformable foil (RTF): Decorative overlay, heat and pressure laminated with suitable resin to [thickness indicated]
 - 2.6.2.1 Thermoplastic film overlay: three-dimensional laminate (3DL) or two-dimensional laminate (2DL) to suit application, based on [solid colour] [wood-grain] [embossed] pattern.

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2.6.2.2 Core: [Particleboard (PD)] [Medium density fibreboard (MDF)] , thickness [as indicated] .

2.6.3 Overlay bonded to both faces where exposed two sides, and when panel material require surface on one side only, reverse side to be overlaid with a plain (buff) balancing sheet.

2.7 Laminated Plastic Materials

2.7.1 Laminated plastic for flatwork: to NEMA LD3.

2.7.1.1 High pressure decorative laminated (HPDL) plastic.

2.7.1.1.1 Type: GP (general purpose).

2.7.1.1.2 Horizontal Surfaces: [HGL] [HGS] to suit application, [1.0] [1.2] mm thick.

2.7.1.1.3 Vertical Surfaces: [VGL] [VDS] to suit application, [0.5] [0.71] mm thick.

2.7.1.1.4 Colour: [integral colour throughout] , [multilayered] .

2.7.1.1.5 Pattern: [metallic] [woodgrain] [solid] [printed pattern] .

2.7.1.1.6 Finish: [textured] [gloss] [embossed] [matt] [satin] [furniture] .

2.7.1.2 Laminated plastic for postforming work: to NEMA LD3.

2.7.1.2.1 Type: postforming.

2.7.1.2.2 Grade: [HGP] [VGP] .

2.7.1.2.3 Size: [1.0] [0.7] mm thick.

2.7.1.2.4 Colour: [integral colour throughout] , [multilayered] .

2.7.1.2.5 Pattern: [printed pattern] [solid] [metallic] [woodgrain] .

2.7.1.2.6 Finish: [textured] [gloss] [furniture] [embossed] [matt] [satin] .

2.7.1.3 Laminated plastic for backing sheet:

2.7.1.3.1 Type: backer.

2.7.1.3.2 Grade: [BKM] [BKV] [BKH] [BKL] .

2.7.1.3.3 Thickness: not less than 0.5 mm thick or same thickness as face laminate.

2.7.1.3.4 Colour: [same colour as face laminate] .

2.7.1.4 Laminated plastic liner sheet: CLS grade, [] colour.[almond] [white]

2.7.1.5 Thermofused Melamine: to NEMA LD3 Grade LPDL, []

2.7.1.5.1 High wear resistant thermofused melamine: equal or exceed 400 cycles (Minimum standard for HPL abrasion test).

- 2.7.1.6 Laminated plastic fire retardant: to NEMA LD3.
 - 2.7.1.6.1 Type: flame retardant.
 - 2.7.1.6.2 Grade: [VGF] [HGF] [SGF] .
 - 2.7.1.6.3 Size: [1.016] [0.76] [1.27] mm thick.
 - 2.7.1.6.4 Colour: [integral colour throughout] , [multilayered] .
 - 2.7.1.6.5 Pattern: [woodgrain] [metallic] [solid] [printed pattern] .
 - 2.7.1.6.6 Finish: [embossed] [furniture] [matt] [gloss] [textured] [satin] .
- 2.7.1.7 Edge finishing for doors, drawer fronts, shelves and false fronts:
 - 2.7.1.7.1 [HPDL to match face] .
 - 2.7.1.7.2 [PVC] [ABS] : solid colour [to match face] , []
 - 2.7.1.7.3 [Matching melamine and polyester overlay edge strip with thermoplastic adhesive] .
 - 2.7.1.7.4 [Edges dadoed or saw kerfed to take plastic "T" moulding in width and colour to match face] .
- 2.7.1.8 Laminated plastic adhesive:
 - 2.7.1.8.1 Adhesive: [] .[resorcinol resin adhesive to CSA O112.10] [contact adhesive to CAN/CGSB-71.20] [two component epoxy thermosetting adhesive] [urea resin adhesive to CSA O112] [polyvinyl adhesive to CSA O112-M]

2.8 Casework Fabrication - General

- 2.8.1 Fabricate casework of specified core and surface finish materials to specified AWMAC AWS quality grade.
 - 2.8.1.1 Construction type: [frameless] [face frame] .
 - 2.8.1.2 Door-cabinet interface: [lipped] [flush] [flush overlay] [flush inset] [reveal overlay] .
- 2.8.2 Set nails and countersink screws apply [plain] [stained] wood filler to indentations, sand smooth and leave ready to receive finish.
- 2.8.3 Shop install cabinet hardware for doors, shelves and drawers. Recess shelf standards unless noted otherwise.
- 2.8.4 Shelving to cabinetwork to be adjustable unless otherwise noted.
- 2.8.5 Provide cutouts for plumbing fixtures, inserts, appliances, outlet boxes and other fixtures.
- 2.8.6 Shop assemble work for delivery to site in size easily handled and to ensure passage through building openings.

- 2.8.7 Obtain governing dimensions before fabricating items which are to accommodate or abut appliances, equipment and other materials.

2.9 Laminated Plastic Casework Fabrication

- 2.9.1 Do laminated plastic fabrication in compliance with NEMA LD3, Annex A and specified AWMAC AWS quality grade.
- 2.9.2 Ensure adjacent parts of continuous laminate work match in colour and pattern.
- 2.9.3 Veneer laminated plastic to core material in accordance with adhesive manufacturer's instructions. Ensure core and laminate profiles coincide to provide continuous support and bond over entire surface. Use continuous lengths up to [3000] [2400] mm. Keep joints 600 mm from sink cutouts.
- 2.9.4 Form shaped profiles and bends as indicated, using post-forming grade laminate to laminate manufacturer's instructions.
- 2.9.5 Use straight self-edging laminate strip for flatwork to cover exposed edge of core material. Chamfer exposed edges uniformly at approximately 20 degrees. Do not mitre laminate edges.
- 2.9.6 Apply laminate backing sheet to reverse side of core of plastic laminate work.
- 2.9.7 Apply laminated plastic liner sheet [where indicated] [to interior of cabinetry] .
- 2.9.8 Drawer Construction:
- 2.9.8.1 Sides:
- 2.9.8.1.1 Custom grade: LPDL (melamine) or HPDL on [MDF] [particleboard] , thickness [12] [16] mm.
- 2.9.8.1.2 Premium grade: 7-ply veneer core with HPDL faces.
- 2.9.8.2 Bottoms: [Hardwood plywood of same species as drawer sides] [Tempered hardboard] [MDF with melamine surfaces] , thickness [6] mm.
- 2.9.8.3 Joinery: Meeting requirements of AWMAC for Grade specified.
- 2.9.8.3.1 Sides, front and back: [Doweled] [Dowel screwed] [Nailed lock joints] [Biscuit splined] [Multiple dovetailed] [Miter fold].
- 2.9.8.4 Drawer bottoms [fully housed into sides and sub front and mechanically fastened to back or plowed into back] [held in place with drawer hardware to sides and mechanically fastened to back and sub front]

2.10 Wood Veneer Surfacing

- 2.10.1 Apply wood veneer to specified core material in accordance with AWMAC AWS requirements for grade specified and as follows.
- 2.10.2 Exposed exterior surfaces:
 - 2.10.2.1 Veneer slicing: [rift] [plain] [rotary] [quarter] cut.
 - 2.10.2.2 Veneer leaf matching: [specialty sketch match] [slip] [random] [book] .
 - 2.10.2.3 Door, drawer and panel matching: [non-sequenced] [blueprint] [sequenced] matching.
 - 2.10.2.4 End matching: [panel] [architectural] [continuous] end match.
 - 2.10.2.5 Grain direction: [vertical] [as indicated] [horizontal] .
- 2.10.3 Edge finishing:
 - 2.10.3.1 [Veneer of same species and cut as exposed surfaces] .
 - 2.10.3.2 [Solid lumber moulding of same species as exposed surfaces] .

2.11 Wood Casework Fabrication

- 2.11.1 Fabricate casework bodies [of specified veneers laid up as specified] [of specified veneered plywood panel materials] in accordance with AWMAC AWS requirements for grade specified and as follows.
 - 2.11.1.1 Exposed interior surfaces: Veneer of same species and cut [and grade] as exposed exterior surfaces.
 - 2.11.1.2 Semi-exposed surfaces: [Veneer of same species as exposed exterior surfaces] [low pressure melamine overlay in [colour] [woodgrain] [solid]] .
- 2.11.2 Fabricate door, drawer and panel surfaces [of specified veneered plywood panel materials of specified veneers laid up as specified] .
- 2.11.3 Drawer construction:
 - 2.11.3.1 Sides:
 - 2.11.3.1.1 AWMAC AWS Custom grade: [solid wood of manufacturer's species option] [LPDL melamine surface] .
 - 2.11.3.1.2 [AWMAC AWS Premium grade: [prefinished seven or nine ply hardwood veneer core with no internal voids] [prefinished solid hardwood] [12] [16] thickness] .
 - 2.11.3.2 Bottoms: [MDF with melamine surfaces] [Hardwood plywood of same species as drawer sides] [Tempered hardboard] , [6] mm thick.

- 2.11.3.3 Joinery: Meeting requirements of AWMAC AWS for Grade specified.
 - 2.11.3.3.1 Sides, front and back: [Miter fold] [Biscuit splined] [Dowel screwed] [Nailed lock joints] [Doweled] [Multiple dovetailed]
 - 2.11.3.3.2 Drawer bottoms [fully housed into sides and sub front and mechanically fastened to back or plowed into back] [held in place with drawer hardware to sides and mechanically fastened to back and sub front] .

2.12 Shop Applied Finish Coatings

- 2.12.1 Finish system: AWMAC AWS system:
 - 2.12.1.1 Include [stain] [wash coat] [filler] .
- 2.12.2 Apply finish system component materials in accordance with manufacturer's instructions.

2.13 Cabinet Hardware

- 2.13.1 Cabinet hardware: to AWMAC AWS quality grade specified and to ANSI/BHMA A156.9, designated by letter B and numeral identifiers as listed below.
- 2.13.2 Finish:
 - 2.13.2.1 Exposed hardware.
 - 2.13.2.2 Semi-exposed hardware: [Manufacturer's standard finish] .
- 2.13.3 Casework door hinges: type as indicated on drawings.
- 2.13.4 Other hinges: type as indicated on drawings
- 2.13.5 Pulls: type as indicated on drawings
- 2.13.6 Knobs: type as indicated on drawings
- 2.13.7 Latches: type as indicated on drawings.
- 2.13.8 Catches: type as indicated on drawings.
- 2.13.9 Shelf rests [and standards] : shelf rest installed in holes drilled, type as indicated on drawings.
- 2.13.10 Shelf brackets [and standards] : type as indicated on drawings.
- 2.13.11 Drawer slides:
 - 2.13.11.1 Slide type: type as indicated on drawings.
 - 2.13.11.2 Extension and capacity: meeting requirements of AWMAC AWS for type and size of drawer, type as indicated on drawings
 - 2.13.11.3 File drawer slides: full extension.
- 2.13.12 Rotating shelves: type as indicated on drawings

- 2.13.13 Pull up shelf supports: adjustable tension, lock in up position self supports, type as indicated on drawings
- 2.13.14 Track and guides for sliding panels: type as indicated on drawings.
- 2.13.15 Sliding glass door hardware: type as indicated on drawings

2.14 Cabinet Locks

- 2.14.1 Provide locks [at all cabinet doors and drawers] [as shown on elevations] .
- 2.14.2 Cabinet locks: to ANSI/BHMA A156.11, designated by letter E and numeral identifiers as listed below.
 - 2.14.2.1 Door or drawer locks: [surface mounted] [half mortised into back of door or drawer] , type as indicated on drawings.
 - 2.14.2.2 Sliding door locks: type as indicated on drawings.
 - 2.14.2.3 Glass door locks: type as indicated on drawings. Elbow catches: at all double doors with locks.
- 2.14.3 Keying: as indicated on drawings .
 - 2.14.3.1 Stamp keying code numbers on keys and cylinders.
- 2.14.4 Finished as indicated on drawings.

2.15 Accessories

- 2.15.1 Wood screws: [stainless steel] [steel] [brass] [plain] [copper] , type and size to suit application.
- 2.15.2 Nails and staples: to CSA B111 and ASTM F1667.
- 2.15.3 Splines: [plastic] [wood] [metal] .
- 2.15.4 Sealant: in accordance with [Section 07 92 00- Joint Sealants] .

2.16 Laminated Plastic Countertops

- 2.16.1 Laminated plastic for flatwork: to NEMA LD3.
 - 2.16.1.1 Type: general purpose.
 - 2.16.1.2 Grade: [HGS] [HGL] .
 - 2.16.1.3 Size: [1.2] [1.0] mm thick.
 - 2.16.1.4 Colour: [integral colour throughout] , [multilayered] .
 - 2.16.1.5 Pattern: [metallic] [printed pattern] [solid] [woodgrain] .
 - 2.16.1.6 Finish: [gloss] [textured] [embossed] [furniture] [satin] [matt] .
- 2.16.2 Laminated plastic for post-forming work: to NEMA LD3.
 - 2.16.2.1 Type: post-forming.
 - 2.16.2.2 Grade: [HGL] [HGS] .
 - 2.16.2.3 Size: [0.76] [1.016] mm thick.

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- 2.16.2.4 Colour: [integral colour throughout] , [multilayered] .
- 2.16.2.5 Pattern: [woodgrain] [metallic] [printed pattern] [solid] .
- 2.16.2.6 Finish: [gloss] [furniture] [textured] [embossed] [matt] [satin] .
- 2.16.3 Core material: [MDF] [particleboard] [exterior grade hardwood plywood with a non-telegraphing grain] .
 - 2.16.3.1 Countertops to receive plumbing fixtures: [Veneer core plywood with type II adhesive] [Water resistant particle board] [Water resistant MDF] .
- 2.16.4 Back splashes: [butt joint] [cove] [per drawings].
- 2.16.5 Front edges: [wood edge] [self-edge] [waterfall edge] [3 mm PVC edge] [no drip bullnose edge] [no drip tilt edge] [As shown on plans] .

3. EXECUTION

3.1 Examination

- 3.1.1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for architectural woodwork installation in accordance with manufacturer's instructions.
 - 3.1.1.1 Visually inspect substrate in presence of Consultant.
 - 3.1.1.2 Inform Consultant of unacceptable conditions immediately upon discovery.
 - 3.1.1.3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Consultant.

3.2 Installation

- 3.2.1 Install architectural wood casework in accordance with AWMAC AWS grade for respective items.
- 3.2.2 In case of conflict between Contract Documents and AWMAC AWS grade requirements, Contract Documents govern.
- 3.2.3 Install prefinished millwork at locations shown on drawings.
 - 3.2.3.1 Position accurately, level, plumb straight.
- 3.2.4 Fasten and anchor millwork securely.
 - 3.2.4.1 Supply and install heavy duty fixture attachments for wall mounted cabinets.
- 3.2.5 Countersink mechanical fasteners at exposed and semi-exposed surfaces, excluding installation attachment screws and screws securing cabinets end to end.
- 3.2.6 Use draw bolts in countertop joints.

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- 3.2.7 Scribe and cut as required to fit abutting walls and to fit properly into recesses and to accommodate piping, columns, fixtures, outlets or other projecting, intersecting or penetrating objects.
- 3.2.8 At junction of plastic laminate counter back splash and adjacent wall finish, apply small bead of sealant in accordance with Section [07 92 00- Joint Sealants] .
- 3.2.9 Apply moisture barrier between wood framing members and masonry or cementitious construction.
- 3.2.10 Fit hardware accurately and securely in accordance with manufacturer's written instructions.
- 3.2.11 Make cutouts for inset equipment and fixtures using templates provided.

3.3 Cleaning

- 3.3.1 Progress Cleaning: clean in accordance with Section [01 74 00- Cleaning] .
 - 3.3.1.1 Leave Work area clean at end of each day.
- 3.3.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section [01 74 00- Cleaning] .
 - 3.3.2.1 Clean [outside surfaces] [millwork] [cabinet work] [inside cupboards [drawers]] .
 - 3.3.2.2 Remove excess glue, pencil and ink marks from surfaces.
- 3.3.3 Waste Management: separate waste materials for [recycling] [reuse] in accordance with Section [01 74 19- Waste Management and Disposal].

3.4 Protection

- 3.4.1 Protect [cabinet work] [millwork] from damage until [final inspection] .
- 3.4.2 Protect installed products and components from damage during construction.
- 3.4.3 Repair damage to adjacent materials caused by architectural woodwork installation.
- 3.4.4 Leave work to be site finished ready for finishing by [Section 09 91 23]

END OF SECTION

1. GENERAL

1.1 Related Requirements

- 1.1.1 [Section 06 10 00 Rough Carpentry]: Furring, blocking, nailing strips, grounds and rough bucks and sleepers.
- 1.1.2 [Section 09 91 23 Interior Painting: Site finishing for finish carpentry] .

1.2 Reference Standards

- 1.2.1 American National Standards Institute (ANSI)
 - 1.2.1.1 ANSI A208.1-[09] , Particleboard.
 - 1.2.1.2 ANSI A208.2-[09] , Medium Density Fibreboard (MDF) for Interior Applications.
 - 1.2.1.3 ANSI/HPVA HP-1-[10] , American National Standard for Hardwood and Decorative Plywood.
 - 1.2.1.4 ANSI/BHMA A156.16 Auxiliary Hardware.
 - 1.2.1.5 ANSI/ASME 18.6.1 [1981 (R2012)] Wood Screws (Inch Series).
- 1.2.2 Architectural Woodwork Manufacturers Association of Canada (AWMAC) and Architectural Woodwork Institute (AWI)
 - 1.2.2.1 Architectural Woodwork Quality Standards, [2nd] edition, [2014] .
- 1.2.3 ASTM International
 - 1.2.3.1 ASTM A 153/A 153M-[16] , Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
 - 1.2.3.2 ASTM E1333-[14] Standard Test Method for Determining Formaldehyde Concentrations in Air and Emission Rates from Wood Products Using a Large Chamber.
 - 1.2.3.3 ASTM F1667-[13] Standard Specification for Driven Fasteners: Nails, Spikes and Staples.
- 1.2.4 Canadian General Standards Board (CGSB)
 - 1.2.4.1 CAN/CGSB-11.3-[M87] , Hardboard.
- 1.2.5 CSA Group (CSA)
 - 1.2.5.1 CSA O121-[08(R2013)] , Douglas Fir Plywood.
 - 1.2.5.2 CSA O151-[09(R2014)] , Canadian Softwood Plywood.
 - 1.2.5.3 CSA O153-[M13] , Poplar Plywood.
 - 1.2.5.4 CAN/CSA-Z809-[08(R2013)] , Sustainable Forest Management.
- 1.2.6 Forest Stewardship Council (FSC)
 - 1.2.6.1 FSC-STD-01-001-[2004] , FSC Principle and Criteria for Forest Stewardship.

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- 1.2.7 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - 1.2.7.1 Material Safety Data Sheets (MSDS).
- 1.2.8 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
 - 1.2.8.1 SCAQMD Rule 1168-[A2005] , Adhesives and Sealants Applications.
- 1.2.9 Sustainable Forestry Initiative (SFI)
 - 1.2.9.1 SFI-[2015-2019] Standard.
- 1.2.10 Underwriters Laboratories of Canada (ULC)
 - 1.2.10.1 CAN/ULC-S104-[10] , Standard Method for Fire Tests of Door Assemblies.
 - 1.2.10.2 CAN/ULC-S105-[09] , Standard Specification for Fire Door Frames.

1.3 Action And Informational Submittals

- 1.3.1 Submit in accordance with Section [01 33 00- Submittal Procedures] .
- 1.3.2 Product Data:
 - 1.3.2.1 Submit manufacturer's instructions, printed product literature, data sheets and catalogue pages for specified products. Include product characteristics, performance criteria, dimensions and profiles, finish and limitations on use.
 - 1.3.2.2 Submit [two] copies of WHMIS MSDS in accordance with Section [01 35 43- Environmental Procedures] [01 35 29.06- Health and Safety Requirements] .
- 1.3.3 Shop Drawings:
 - 1.3.3.1 Prepare and submit shop drawings in general accordance with AWMAC AWS manual.
 - 1.3.3.2 Indicate profiles and dimensions, assembly techniques, jointing, methods of fastening, terminations and other related details.
 - 1.3.3.3 Indicate materials, thicknesses, finishes and hardware.
 - 1.3.3.4 Include schedule or key plan.
 - 1.3.3.5 Show profiles, elevations and details at scales recommended by AWMAC AWS.
 - 1.3.3.6 Where necessary, show location and type of blocking and backing required within supporting assemblies.
- 1.3.4 Samples:
 - 1.3.4.1 Submit triplicate 300 mm long representative samples of each typical item of finish carpentry.

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- 1.3.4.1.1 Standing and running trim: 300 mm long.
 - 1.3.4.1.2 Panel materials: 300 mm x 300 mm.
 - 1.3.4.2 Shop applied coating samples:
 - 1.3.4.2.1 For transparent finish, submit [triplicate] samples of each species and cut of wood [veneer] to be used, finished [as specified] [to match project sample] .
 - 1.3.4.2.2 For opaque finish, submit [triplicate] samples for each colour selection, finished [as specified] [to match project sample] .
 - 1.3.4.3 Decorative overlaid composite panels, complete with applied edge treatment and corner treatment, minimum 300 mm x 300 mm.
 - 1.3.4.4 Samples for site applied finish:
 - 1.3.4.4.1 Furnish [four] samples of each finish carpentry item and composite panel material to Contractor for preparation of field applied finish samples.
 - 1.3.4.5 Submit [duplicate] samples of each hardware item to be left exposed in final construction. Samples will [not] be returned for incorporation into the work.
- 1.3.5 Certifications: submit certificates signed by manufacturer certifying materials comply with specified performance characteristics, physical properties and requirements of referenced standards.
- 1.3.6 Test and Evaluation Reports: submit certified test reports for [composite wood] from approved independent testing laboratories, indicating compliance with specifications for specified performance characteristics and physical properties.

1.4 Quality Assurance

- 1.4.1 Perform Work of this Section by finish carpentry contractor with minimum 5 years of current experience and having completed minimum one project in the past 5 years with value within 20% of the cost of the work of this Section.
- 1.4.2 Independent inspection/testing agency will be engaged by Consultant for purpose of inspecting and/or testing Work of this Section.
- 1.4.3 Mock-ups:
 - 1.4.3.1 SPEC NOTE: Specify requirements of mock-up required. If more than one mock-up is required specify particulars of each sample unit. AWMAC/AWS advises that mockups are not necessary for most projects.
 - 1.4.3.2 Construct mock-ups in accordance with [Section 01 45 00-Quality Control] .

- 1.4.3.3 Shop prepare one [wall paneling] [typical example of each specified item of standing and running trim] [stair] , [complete with shop applied finishes] , and install where directed by Consultant.
- 1.4.3.4 Allow [24] hours for inspection of mock-up by Consultant before proceeding with Work.
- 1.4.3.5 When accepted, mock-up will demonstrate minimum standard for Work.
- 1.4.3.6 Do not proceed with work prior to receipt of written acceptance of mock-up by Consultant.
- 1.4.3.7 Accepted mock-up may[not] remain as part of finished work.

1.5 Delivery, Storage And Handling

- 1.5.1 Deliver, store and handle materials in accordance with Section [01 61 00- Common Product Requirements] and with AWS recommendations and as follows.
- 1.5.2 Deliver finish carpentry materials only when area of work is enclosed, plaster and concrete work is dry, area is broom clean and site environmental conditions are acceptable for installation.
- 1.5.3 Storage and Handling Requirements:
 - 1.5.3.1 Store materials in dry location indoors and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - 1.5.3.2 Maintain indoor temperature and humidity within range recommended by AWS for location of the Work.
 - 1.5.3.3 Store products on site as specified for minimum 72 hours prior to installation.
 - 1.5.3.4 Store and protect finish carpentry products from moisture, nicks, scratches, and blemishes.
 - 1.5.3.5 Replace defective or damaged materials with new.
- 1.5.4 Waste Management: for packaging and materials, in accordance with [Section 01 74 19- Waste Management and Disposal] .

2. PRODUCTS

2.1 Regulatory Requirements

- 2.1.1 Wood fire rated frames and panels: labelled and listed by an organization accredited by Standards Council of Canada in conformance with CAN4-S104 [NFPA 252] for ratings specified or indicated.
- 2.1.2 Provide fire labelled frames for openings requiring fire protection ratings. Test products in conformance with [CAN4-S104] , [NFPA 252] and listed by nationally recognized agency having factory inspection services.

2.2 Quality Grade

- 2.2.1 Provide all materials and perform all work of this Section in accordance with AWMAC AWS Custom Grade, except as follows:
 - 2.2.1.1 Economy Grade: [storage areas] [janitor's closets] [mechanical rooms and utility areas] .
 - 2.2.1.2 Premium Grade: as indicated on drawings.
- 2.2.2 In case of conflict between Contract Documents and AWMAC AWS grade requirements, Contract Documents govern.

2.3 Materials

- 2.3.1 Softwood and hardwood lumber: Sound lumber to specified AWS grade requirements, kiln-dried to moisture content recommended for location of the Work.
 - 2.3.1.1 Machine stress-rated lumber is acceptable for all purposes.
- 2.3.2 MDF (medium density fibreboard) core: to ANSI A208.2, density 769 kg/m³, Grade as indicated on drawings.
 - 2.3.2.1 Use moisture resistant MR grade for countertops and splash-backs to receive plumbing fixtures.
- 2.3.3 Interior mat-formed wood particleboard: to ANSI/NPA A208.1, industrial grade M-2 or M-3, medium density (640-800 kg/m³), thickness 19 mm unless indicated otherwise.
 - 2.3.3.1 Use moisture resistant grade 2-M-2 or 2-M-3 for countertops and splash-backs to receive plumbing fixtures.
- 2.3.4 Douglas fir plywood (DFP): to [CSA O121] , standard construction.
- 2.3.5 Canadian softwood plywood (CSP): to [CSA O151] , standard construction.
- 2.3.6 Hardwood plywood: to [ANSI/HPVA HP-1] .
- 2.3.7 Poplar plywood (PP): to [CSA O153] , standard construction.
- 2.3.8 Hardboard: to [CAN/CGSB-11.3] .
- 2.3.9 Low density fibreboard: to [CSA-A247M] .
- 2.3.10 Decorative overlaid composite panels.
 - 2.3.10.1 Decorative overlay, heat and pressure laminated with suitable resin to [12.7] [thickness indicated] mm thick [MDF] [particleboard] [urea-formaldehyde free] core.
 - 2.3.10.2 Overlay bonded to both faces where exposed two sides, and when panel material require surface on one side only, reverse side to be overlaid with a plain (buff) balancing sheet.
 - 2.3.10.3 Edge finishing: [matching melamine and polyester overlay edge strip with self-adhesive] [edges dadoed or saw kerfed to take plastic "T" moulding in width and colour to match

melamine finish] [edge filler to provide a smooth surface for paint finish] .

2.4 Fastenings

- 2.4.1 Provide screws, bolts, expansion shields and other fastening devices required for satisfactory installation.
- 2.4.2 Exposed fasteners to match finish of hardware.
- 2.4.3 Nails and staples: to ASTM F1677, [galvanized to ASTM A 153/A 153M] [stainless steel] for exterior work, interior humid areas; [copper] [plain] finish elsewhere.
- 2.4.4 Wood screws: to ANSI/ASME 18.6.1, countersunk flush type unless indicated otherwise, in sizes to suit application, galvanized to ASTM A 153/A 153M for exterior work, interior humid areas, [copper] [stainless steel] [electroplated steel] [plain] [brass] for other locations.
- 2.4.5 Splines: [metal] [wood] [plastic] .
- 2.4.6 Panel adhesive: Type to suit application.
 - 2.4.6.1 VOC limit [200] [50] g/L maximum to [GS-36] [SCAQMD Rule 1168] .

2.5 Hardware

- 2.5.1 Use one manufacturer's product for all similar items.
- 2.5.2 Shelf Hardware: to ANSI/BHMA A156.16 [as listed below] [designated by letter and numeral identifier] finished as indicated on drawings.
 - 2.5.2.1 Shelf brackets: as indicated on drawings.
 - 2.5.2.2 Garment rod and shelf brackets: as indicated on drawings.
 - 2.5.2.3 Garment hooks: as indicated on drawings.
 - 2.5.2.4 Closet shelf supports: as indicated on drawings.
 - 2.5.2.5 Closet hanger bar and supports: as indicated on drawings.
- 2.5.3 Miscellaneous Hardware: to ANSI/BHMA A156.16 [as listed below] [designated by letter and numeral identifier] finished as indicated on drawings.
 - 2.5.3.1 Handrail brackets: as indicated on drawings.
 - 2.5.3.2 Garment hooks: as indicated on drawings.
 - 2.5.3.3 Wall rail brackets: as indicated on drawings.
 - 2.5.3.4 Bumper rail brackets: as indicated on drawings.
- 2.5.4 Hardware fastenings:
 - 2.5.4.1 Supply screws, bolts, expansion shields and other fastening devices required for satisfactory installation of hardware.
 - 2.5.4.2 Exposed fastening devices to match finish of hardware.

- 2.5.4.3 Use fasteners compatible with material through which they pass.

2.6 Factory Finishing

- 2.6.1 Provide the following items with factory finish as follows:
 - 2.6.1.1 Standing and running trim: as indicated on drawings.
 - 2.6.1.2 Frames: as indicated on drawings.
 - 2.6.1.3 Style and rail paneling: as indicated on drawings.
 - 2.6.1.4 Solid board paneling: as indicated on drawings.
 - 2.6.1.5 Stairs and handrails: as indicated on drawings.
 - 2.6.1.6 Wall rails and bumper rails: as indicated on drawings.
 - 2.6.1.7 Shelving: as indicated on drawings.
- 2.6.2 Finish grade to match grade of product to be finished.

3. EXECUTION

3.1 Examination

- 3.1.1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for wood products installation in accordance with AWS tolerances and requirements of Contract Documents.
 - 3.1.1.1 Visually inspect substrate in presence of [Departmental Representative] [Consultant] [DCC Representative].
 - 3.1.1.2 Inform [Consultant] [DCC Representative] [Departmental Representative] of unacceptable conditions immediately upon discovery.
 - 3.1.1.3 Proceed with installation only after unacceptable conditions have been remedied [and after receipt of written approval to proceed from [Consultant] [DCC Representative] [Departmental Representative].

3.2 Preparation

- 3.2.1 Back prime woodwork before installation, to AWS.

3.3 Installation

- 3.3.1 Install items of finish carpentry in accordance with AWMAC AWS grade specified for respective items.
- 3.3.2 In case of conflict between Contract Documents and AWS grade requirements, Contract Documents govern.
- 3.3.3 Install items of finish carpentry at locations shown on drawings.
 - 3.3.3.1 Position accurately, level, plumb straight.
 - 3.3.3.2 Fasten and anchor securely.

- 3.3.4 Scribe and cut as required, fit to abutting walls, and surfaces, fit properly into recesses and to accommodate piping, columns, fixtures, outlets, or other projecting, intersecting or penetrating objects.
- 3.3.5 Form joints to conceal shrinkage.

3.4 Construction

- 3.4.1 Fastening:
 - 3.4.1.1 Position items of finished carpentry work accurately, level, plumb, true and fasten or anchor securely.
 - 3.4.1.2 Design and select fasteners to suit size and nature of components being joined. Use proprietary devices as recommended by manufacturer.
 - 3.4.1.3 Set finishing nails to receive filler. Where screws are used to secure members, countersink screw in round smooth cut hole and plug with wood plug to match material being secured.
 - 3.4.1.4 Replace items of finish carpentry with damage to wood surfaces including hammer and other bruises.
- 3.4.2 Standing and running trim:
 - 3.4.2.1 Butt and cope internal joints of baseboards to make snug, tight, joint. Cut right angle joints of casing and base with mitred joints.
 - 3.4.2.2 Fit backs of baseboards and casing snugly to wall surfaces to eliminate cracks at junction of base and casing with walls.
 - 3.4.2.3 Make joints in baseboard, where necessary using a [45] degrees scarf type joint.
 - 3.4.2.4 Install door and window trim in single lengths without splicing.
- 3.4.3 Interior and exterior frames:
 - 3.4.3.1 Set frames with plumb sides level heads [and sills] and secure.
- 3.4.4 Panelling:
 - 3.4.4.1 Secure panelling and perimeter trim using adhesive recommended for purpose by manufacturer. Fill nail holes caused by temporary fixing with filler matching wood in colour.
 - 3.4.4.2 Secure panelling and perimeter trim using concealed fasteners.
 - 3.4.4.3 Secure panelling and perimeter trim using counter sunk screws plugged with matching wood plugs.
- 3.4.5 Stairs:

- 3.4.5.1 Install stairs to location and details as indicated.
- 3.4.6 Handrails, wall rails and bumper rails.
 - 3.4.6.1 Install handrails, wall rails and bumper rails in locations indicated.
 - 3.4.6.2 Make joints hair line, dowelled and glued.
 - 3.4.6.3 Install support brackets [as indicated] .
 - 3.4.6.4 Install brackets at ends.
 - 3.4.6.5 Secure using counter sunk screws plugged with matching wood plugs.
- .2 Shelving:
 - 3.4.6.6 Install shelving on [shelf brackets] [ledgers] [as indicated] .

3.5 Cleaning

- 3.5.1 Progress Cleaning: clean in accordance with Section [01 74 00- Cleaning] .
 - 3.5.1.1 Leave Work area clean at end of each day.
- 3.5.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section [01 74 00- Cleaning] .
- 3.5.3 Waste Management: separate waste materials for [reuse] [recycling] in accordance with Section [01 74 19- Waste Management and Disposal].

3.6 Touchup And Protection

- 3.6.1 Fill and retouch all nicks, chips and scratches in factory finishes and substrate materials to AWS standards. Replace damaged items that cannot be repaired to AWS standards.
- 3.6.2 Protect installed products and components from damage during construction.
- 3.6.3 Repair damage to adjacent materials caused by finish carpentry installation.
- 3.6.4 Leave work to be site finished ready for finishing by [Section 09 91 23- Interior Painting] .

END OF SECTION

1. GENERAL

1.1 Related Requirements

- 1.1.1 [Section 07 92 00- Joint Sealants: Sealant materials and application] .
- 1.1.2 [Section 09 91 23- Interior Painting: Site finishing materials and application].

1.2 Reference Standards

- 1.2.1 American National Standards Institute (ANSI)
 - 1.2.1.1 ANSI/ASME 18.6.1 [1981 (R2012)] Wood Screws (Inch Series).
 - 1.2.1.2 ANSI/BHMA A156.9-[2010] , Cabinet Hardware.
 - 1.2.1.3 ANSI/BHMA A156.11-[2014] , Cabinet Locks.
 - 1.2.1.4 ANSI/BHMA A156.16-[2013] , Auxiliary Hardware.
 - 1.2.1.5 ANSI/BHMA A156.18-[2012] , Materials and Finishes.
 - 1.2.1.6 ANSI/BHMA A156.20-[2006] , Strap and Tee Hinges and Hasps.
 - 1.2.1.7 ANSI A208.1-[09] , Particleboard.
 - 1.2.1.8 ANSI A208.2-[09] , Medium Density Fiberboard (MDF) for Interior Applications.
 - 1.2.1.9 ANSI/HPVA HP-1-[10] , Standard for Hardwood and Decorative Plywood.
- 1.2.2 Architectural Woodwork Manufacturers Association of Canada (AWMAC)
 - 1.2.2.1 Architectural Woodwork Standards (AWMAC AWS), [2014]
- 1.2.3 ASTM International
 - 1.2.3.1 ASTM A 153/A 153M-[16] , Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
 - 1.2.3.2 ASTM E 1333-[14] , Standard Test Method for Determining Formaldehyde Concentrations in Air and Emission Rates From Wood Products Using a Large Chamber.
 - 1.2.3.3 ASTM F1667-[13] Standard Specification for Driven Fasteners: Nails, Spikes and Staples.
- 1.2.4 Canadian General Standards Board (CGSB)
 - 1.2.4.1 CAN/CGSB-11.3-[M87] , Hardboard.
 - 1.2.4.2 CAN/CGSB-71.20-[M88] , Adhesive, Contact, Brushable.
 - 1.2.4.3 CAN/CGSB-71.19-[M88] , Adhesive, Contact, Sprayable.
- 1.2.5 CSA Group (CSA)

- 1.2.5.1 CSA O112-M Series [1977 (R2006)] Standards for Wood Adhesives.
- 1.2.5.2 CSA O121-[08(R2013)] , Douglas Fir Plywood.
- 1.2.5.3 CSA O141-[05 (R2014)] , Softwood Lumber.
- 1.2.5.4 CSA O151-[14] , Canadian Softwood Plywood.
- 1.2.5.5 CSA O153-[M1980 (R2014)] , Poplar Plywood.
- 1.2.5.6 CAN/CSA-Z809-[08(R2013)] , Sustainable Forest Management.
- 1.2.6 Forest Stewardship Council (FSC)
 - 1.2.6.1 FSC-STD-01-001-[2004] , FSC Principle and Criteria for Forest Stewardship.
- 1.2.7 Green Seal Environmental Standards (GS)
 - 1.2.7.1 GS-11-[2015] , Paints, Coatings, Stains and Sealers.
 - 1.2.7.2 GS-36-[2013] , Adhesives for Commercial Use.
- 1.2.8 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - 1.2.8.1 Material Safety Data Sheets (MSDS).
- 1.2.9 National Electrical Manufacturers Association (NEMA)
 - 1.2.9.1 ANSI/NEMA LD-3-[05] , High-Pressure Decorative Laminates (HPDL).
- 1.2.10 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
 - 1.2.10.1 SCAQMD Rule 1113-[A2011] , Architectural Coatings.
 - 1.2.10.2 SCAQMD Rule 1168-[A2005] , Adhesives and Sealants Applications.
- 1.2.11 Sustainable Forestry Initiative (SFI)
 - 1.2.11.1 SFI-[2015-2019] Standard and Rules.

1.3 Pre-Installation Meeting

- 1.3.1 Prior to enclosing framing, convene a meeting of contractor, casework fabricator, casework installer, framing subcontractor [and Consultant] .
 - 1.3.1.1 Review locations of backing required for casework installation as shown on shop drawings and as necessary for installation.
 - 1.3.1.2 Review method of attachment for backing to wall system.
 - 1.3.1.3 Review coordination with other affected sections.

1.4 Action And Informational Submittals

- 1.4.1 Submit in accordance with Section [01 33 00- Submittal Procedures] .

- 1.4.2 Product Data:
 - 1.4.2.1 Prepare and submit material list in accordance with AWMAC AWS, cross-referenced to specifications.
 - 1.4.2.2 Include manufacturer's instructions, printed product literature, data sheets and catalogue pages for all materials and products to be incorporated into architectural wood casework and include product characteristics, performance criteria, dimensions and profiles, finish and limitations on use.
 - 1.4.2.3 Submit [two] copies of WHMIS MSDS in accordance with Section [01 35 43- Environmental Procedures] [01 35 29.06- Health and Safety Requirements] .
- 1.4.3 Hardware List:
 - 1.4.3.1 Submit hardware list cross-referenced to specifications.
 - 1.4.3.2 Include manufacturer's specification sheets indicating name, model, material, function, finish, BHMA designations and other pertinent information.
- 1.4.4 Shop Drawings:
 - 1.4.4.1 Prepare and submit shop drawings in accordance with AWMAC AWS and as follows.
 - 1.4.4.2 Submit [two] sets of shop drawings for initial review in accordance with requirements of Division 01. Revise as directed, submit [six] copies for final acceptance and distribution.
 - 1.4.4.3 Indicate details of construction, profiles, jointing, fastening and other related details.
 - 1.4.4.3.1 Scales: profiles, details half full size.
 - 1.4.4.4 Indicate materials, thicknesses, finishes and hardware.
 - 1.4.4.5 Indicate locations of service outlets in casework, [typical and special installation conditions] , and connections, attachments, anchorage and location of exposed fastenings.
 - 1.4.4.6 Show location on casework elevations of backing required in supporting structure for attachment of casework.
 - 1.4.4.7 Indicate AWMAC AWS quality grade where different from predominant grade specified.
 - 1.4.4.8 Include color schedule of all casework items, including all countertop, exposed, and semi-exposed cabinet finishes, finish material manufacturer, pattern, and color.
- 1.4.5 Samples:
 - 1.4.5.1 Prepare and submit samples in accordance with AWMAC AWS and as follows.

- 1.4.5.2 Apply sample finishes to specified substrate or core material minimum 300 x 300 mm to match designer sample. For veneers with transparent finish submit three samples to illustrate range and colour of grain expected.
- 1.4.5.3 Shop applied coatings:
 - 1.4.5.3.1 For transparent finish, submit [triplicate] samples of each species and cut of wood to be used, finished [as specified] [to match project sample] .
 - 1.4.5.3.2 For opaque finish, submit [triplicate] samples for each colour selection, finished [to match project sample] [as specified] .
- 1.4.5.4 Submit duplicate samples of laminated plastic for each specified colour selection.
- 1.4.5.5 Submit duplicate samples of laminated plastic joints, edging, cutouts and post-formed profiles.
- 1.4.5.6 [Furnish [four] samples of each lumber and composite panel material to Contractor for preparation of field applied finish samples in accordance with Section 09 91 23Interior Painting] .
- 1.4.5.7 Certifications: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
- 1.4.5.8 Submit statement of experience and qualifications of architectural wood casework fabricator.

1.5 Quality Assurance

- 1.5.1 Perform Work of this Section by single architectural wood casework fabricator with minimum 5 years of current architectural casework production experience and having completed minimum one project in the past 5 years with value within 20% of the cost of the work of this Section.
- 1.5.2 Independent inspection/testing agency may be engaged by Engineer, Consultant for purpose of inspecting and/or testing Work of this Section.
 - 1.5.2.1 Cost of inspection and testing services will be borne by Engineer, Consultant.
 - 1.5.2.2 Costs of inspection and testing services will be paid in accordance with [Section 01 21 00 Allowances] .

1.6 Delivery, Storage And Handling

- 1.6.1 Deliver, store and handle materials in accordance with Section [01 61 00- Common Product Requirements] [with manufacturer's written instructions] .

- 1.6.2 Deliver wood casework only when area of work is enclosed, plaster and concrete work is dry, and area is broom clean and site environmental conditions are acceptable for installation.
- 1.6.3 Protect millwork against dampness and damage during and after delivery.
- 1.6.4 Store millwork in ventilated areas, protected from extreme changes of temperature and humidity, and within range recommended by AWMAC AWS for location of project.
- 1.6.5 Store materials [indoors] [in dry location] in clean, dry, well-ventilated area.
- 1.6.6 Protect architectural woodwork and hardware from nicks, scratches, and blemishes.
- 1.6.7 Replace defective or damaged materials with new.
- 1.6.8 Waste Management: for packaging and materials, in accordance with [Section 01 74 19- Waste Management and Disposal].

2. PRODUCTS

2.1 Sustainability Characteristics

- 2.1.1 Lumber, plywood and composite wood products to be CAN/CSA-Z809 or FSC or SFI certified.
- 2.1.2 Composite wood products: [formaldehyde emissions within the following limits when tested in accordance with ASTM E1333] [contain no added formaldehyde] .
 - 2.1.2.1 Hardwood plywood with veneer core (HWPW-VC): [0.05 ppm] .
 - 2.1.2.2 Hardwood plywood with composite core (HWPW-CC): [0.05 ppm] .
 - 2.1.2.3 Particleboard (PB): [0.09 ppm] .
 - 2.1.2.4 Medium density fibreboard (MDF): [0.11 ppm] .
 - 2.1.2.5 Thin (less than 8 mm) medium density fibreboard (tMDF): [0.13 ppm] .
- 2.1.3 Recycled content:
 - 2.1.3.1 Composite wood products: in accordance with Section [01 35 21- LEED Requirements] .
 - 2.1.3.2 Fibreboard must contain less than [10] % roundwood by weight, using weighted average over three month period at manufacturing locations.
 - 2.1.3.3 Lumber: [recovered] [salvaged] lumber: in accordance with [Section 01 35 21- LEED Requirements] .
- 2.1.4 Adhesives: VOC limit [120] [30] g/L maximum to [GS-36] [SCAQMD Rule 1168] .

- 2.1.5 Coatings
 - 2.1.5.1 Clear Wood Finishes: VOC limit [350] [550] g/L maximum to [SCAQMD Rule 1113] [GS-11] .
 - 2.1.5.2 Paints: VOC limit [50] [100] g/L maximum to [GS-11] [SCAQMD Rule 1113] .

2.2 Quality Grade

- 2.2.1 Provide all materials and perform all fabrication in accordance with AWMAC AWS Custom Grade
- 2.2.2 In case of conflict between Contract Documents and AWMAC AWS grade requirements, Contract Documents govern.

2.3 Lumber

- 2.3.1 Softwood and Hardwood Lumber: Sound lumber to specified AWMAC AWS quality grade requirements, kiln-dried to moisture content recommended by AWMAC AWS for location of the Work.
- 2.3.2 Machine stress-rated lumber is acceptable for all purposes.
- 2.3.3 Face framing, pulls, trims, molding, edge-banding, [stiles and rails] : as indicated on drawings.

2.4 Panel Materials

- 2.4.1 Interior mat-formed wood particleboard: to ANSI/NPA A208.1, industrial grade M-2 or M-3, medium density (640-800 kg/m³), thickness 19 mm unless indicated otherwise.
 - 2.4.1.1 Use moisture resistant grade 2-M-2 or 2-M-3 for countertops and splash-backs to receive plumbing fixtures.
- 2.4.2 MDF (medium density fibreboard) core: to ANSI A208.2, density 769 kg/m³, Grade as indicated on drawings.
 - 2.4.2.1 Use moisture resistant MR grade for countertops and splash-backs to receive plumbing fixtures.
- 2.4.3 Douglas fir plywood (DFP): to CSA O121, standard construction.
- 2.4.4 Hardwood plywood: to [ANSI/HPVA HP-1] [CHPA grading rules] .
- 2.4.5 Canadian softwood plywood (CSP): to CSA O151, standard construction.
- 2.4.6 Poplar plywood (PP): to CSA O153, standard construction.
- 2.4.7 Hardboard: To CAN/CGSB-11.3.

2.5 Decorative Veneer Faced Plywood

- 2.5.1 Decorative hardwood plywood: to specified AWMAC AWS requirements for grade specified for exposed [and semi-exposed] surfaces:

- 2.5.1.1 Veneer species: as indicated on drawings.
- 2.5.1.2 Matching: as indicated on drawings.
- 2.5.1.3 Core: as indicated on drawings.
- 2.5.1.4 Thickness: as indicated on drawings.
- 2.5.1.5 Bond: Type II.
- 2.5.1.6 Sanding: [regular sanding] [no sanding] [touch sanding] .
- 2.5.1.7 Grain direction: as indicated on drawings.

2.6 Decorative Overlaid Composite Panels

- 2.6.1 Thermally Fused Laminate (TFL): to NEMA LD3 Grade VGL, High wear resistant thermofused melamine: equal or exceed 400 cycles (Minimum standard for HPL abrasion test).
 - 2.6.1.1 Laminate: Decorated paper with melamine or polyester resin, from based on [solid] [metallic] [printed pattern] [woodgrain] , [integral colour throughout] , [multilayered] colour range with [furniture] [gloss] [textured] [matt] [embossed] [satin] finish selected by Consultant from manufacturer's full range.
 - 2.6.1.2 Core: [Particleboard (PD)] [Medium density fibreboard (MDF)] .
- 2.6.2 Rigid thermoformable foil (RTF): Decorative overlay, heat and pressure laminated with suitable resin to [thickness indicated]
 - 2.6.2.1 Thermoplastic film overlay: three-dimensional laminate (3DL) or two-dimensional laminate (2DL) to suit application, based on [solid colour] [wood-grain] [embossed] pattern.
 - 2.6.2.2 Core: [Particleboard (PD)] [Medium density fibreboard (MDF)] , thickness [as indicated] .
- 2.6.3 Overlay bonded to both faces where exposed two sides, and when panel material require surface on one side only, reverse side to be overlaid with a plain (buff) balancing sheet.

2.7 Laminated Plastic Materials

- 2.7.1 Laminated plastic for flatwork: to NEMA LD3.
 - 2.7.1.1 High pressure decorative laminated (HPDL) plastic.
 - 2.7.1.1.1 Type: GP (general purpose).
 - 2.7.1.1.2 Horizontal Surfaces: [HGL] [HGS] to suit application, [1.0] [1.2] mm thick.
 - 2.7.1.1.3 Vertical Surfaces: [VGL] [VDS] to suit application, [0.5] [0.71] mm thick.
 - 2.7.1.1.4 Colour: [integral colour throughout] , [multilayered] .

- 2.7.1.1.5 Pattern: [metallic] [woodgrain] [solid] [printed pattern] .
- 2.7.1.1.6 Finish: [textured] [gloss] [embossed] [matt] [satin] [furniture] .
- 2.7.1.2 Laminated plastic for postforming work: to NEMA LD3.
 - 2.7.1.2.1 Type: postforming.
 - 2.7.1.2.2 Grade: [HGP] [VGP] .
 - 2.7.1.2.3 Size: [1.0] [0.7] mm thick.
 - 2.7.1.2.4 Colour: [integral colour throughout] , [multilayered] .
 - 2.7.1.2.5 Pattern: [printed pattern] [solid] [metallic] [woodgrain] .
 - 2.7.1.2.6 Finish: [textured] [gloss] [furniture] [embossed] [matt] [satin] .
- 2.7.1.3 Laminated plastic for backing sheet:
 - 2.7.1.3.1 Type: backer.
 - 2.7.1.3.2 Grade: [BKM] [BKV] [BKH] [BKL] .
 - 2.7.1.3.3 Thickness: not less than 0.5 mm thick or same thickness as face laminate.
 - 2.7.1.3.4 Colour: [same colour as face laminate] .
- 2.7.1.4 Laminated plastic liner sheet: CLS grade, [] colour.[almond] [white]
- 2.7.1.5 Thermofused Melamine: to NEMA LD3 Grade LPDL, []
 - 2.7.1.5.1 High wear resistant thermofused melamine: equal or exceed 400 cycles (Minimum standard for HPL abrasion test).
- 2.7.1.6 Laminated plastic fire retardant: to NEMA LD3.
 - 2.7.1.6.1 Type: flame retardant.
 - 2.7.1.6.2 Grade: [VGF] [HGF] [SGF] .
 - 2.7.1.6.3 Size: [1.016] [0.76] [1.27] mm thick.
 - 2.7.1.6.4 Colour: [integral colour throughout] , [multilayered] .
 - 2.7.1.6.5 Pattern: [woodgrain] [metallic] [solid] [printed pattern] .
 - 2.7.1.6.6 Finish: [embossed] [furniture] [matt] [gloss] [textured] [satin] .
- 2.7.1.7 Edge finishing for doors, drawer fronts, shelves and false fronts:
 - 2.7.1.7.1 [HPDL to match face] .
 - 2.7.1.7.2 [PVC] [ABS] : solid colour [to match face] , []

2.7.1.7.3 [Matching melamine and polyester overlay edge strip with thermoplastic adhesive] .

2.7.1.7.4 [Edges dadoed or saw kerfed to take plastic "T" moulding in width and colour to match face] .

2.7.1.8 Laminated plastic adhesive:

2.7.1.8.1 Adhesive: [] .[resorcinol resin adhesive to CSA O112.10] [contact adhesive to CAN/CGSB-71.20] [two component epoxy thermosetting adhesive] [urea resin adhesive to CSA O112] [polyvinyl adhesive to CSA O112-M]

2.8 Casework Fabrication - General

2.8.1 Fabricate casework of specified core and surface finish materials to specified AWMAC AWS quality grade.

2.8.1.1 Construction type: as indicated on drawing .

2.8.1.2 Door-cabinet interface: as indicated on drawing

2.8.2 Set nails and countersink screws apply [plain] [stained] wood filler to indentations, sand smooth and leave ready to receive finish.

2.8.3 Shop install cabinet hardware for doors, shelves and drawers. Recess shelf standards unless noted otherwise.

2.8.4 Shelving to cabinetwork to be adjustable unless otherwise noted.

2.8.5 Provide cutouts for plumbing fixtures, inserts, appliances, outlet boxes and other fixtures.

2.8.6 Shop assemble work for delivery to site in size easily handled and to ensure passage through building openings.

2.8.7 Obtain governing dimensions before fabricating items which are to accommodate or abut appliances, equipment and other materials.

2.9 Laminated Plastic Casework Fabrication

2.9.1 Do laminated plastic fabrication in compliance with NEMA LD3, Annex A and specified AWMAC AWS quality grade.

2.9.2 Ensure adjacent parts of continuous laminate work match in colour and pattern.

2.9.3 Veneer laminated plastic to core material in accordance with adhesive manufacturer's instructions. Ensure core and laminate profiles coincide to provide continuous support and bond over entire surface. Use continuous lengths up to [3000] [2400] mm. Keep joints 600 mm from sink cutouts.

2.9.4 Form shaped profiles and bends as indicated, using post-forming grade laminate to laminate manufacturer's instructions.

- 2.9.5 Use straight self-edging laminate strip for flatwork to cover exposed edge of core material. Chamfer exposed edges uniformly at approximately 20 degrees. Do not mitre laminate edges.
- 2.9.6 Apply laminate backing sheet to reverse side of core of plastic laminate work.
- 2.9.7 Apply laminated plastic liner sheet [where indicated] [to interior of cabinetry] .
- 2.9.8 Drawer Construction:
 - 2.9.8.1 Sides:
 - 2.9.8.1.1 Custom grade: LPDL (melamine) or HPDL on [MDF] [particleboard] , thickness [12] [16] mm.
 - 2.9.8.1.2 Premium grade: 7-ply veneer core with HPDL faces.
 - 2.9.8.2 Bottoms: [Hardwood plywood of same species as drawer sides] [Tempered hardboard] [MDF with melamine surfaces] , thickness [6] mm.
 - 2.9.8.3 Joinery: Meeting requirements of AWMAC for Grade specified.
 - 2.9.8.3.1 Sides, front and back: [Doweled] [Dowel screwed] [Nailed lock joints] [Biscuit splined] [Multiple dovetailed] [Miter fold] .
 - 2.9.8.4 Drawer bottoms [fully housed into sides and sub front and mechanically fastened to back or plowed into back] [held in place with drawer hardware to sides and mechanically fastened to back and sub front]

2.10 Wood Veneer Surfacing

- 2.10.1 Apply wood veneer to specified core material in accordance with AWMAC AWS requirements for grade specified and as follows.
- 2.10.2 Exposed exterior surfaces:
 - 2.10.2.1 Veneer slicing: [rift] [plain] [rotary] [quarter] cut.
 - 2.10.2.2 Veneer leaf matching: [specialty sketch<empty/>match] [slip] [random] [book] .
 - 2.10.2.3 Door, drawer and panel matching: [non-sequenced] [blueprint] [sequenced] matching.
 - 2.10.2.4 End matching: [panel] [architectural] [continuous] end match.
 - 2.10.2.5 Grain direction: [vertical] [as indicated] [horizontal] .
- 2.10.3 Edge finishing:
 - 2.10.3.1 [Veneer of same species and cut as exposed surfaces] .

- 2.10.3.2 [Solid lumber moulding of same species as exposed surfaces] .

2.11 Wood Casework Fabrication

- 2.11.1 Fabricate casework bodies [of specified veneers laid up as specified] [of specified veneered plywood panel materials] in accordance with AWMAC AWS requirements for grade specified and as follows.

2.11.1.1.1 Exposed interior surfaces: Veneer of same species and cut [and grade] as exposed exterior surfaces.

2.11.1.1.2 Semi-exposed surfaces: [Veneer of same species as exposed exterior surfaces] [low pressure melamine overlay in [colour] [woodgrain] [solid]] .

- 2.11.2 Fabricate door, drawer and panel surfaces [of specified veneered plywood panel materials of specified veneers laid up as specified] .

- 2.11.3 Drawer construction:

- 2.11.3.1 Sides:

2.11.3.1.1 AWMAC AWS Custom grade: [solid wood of manufacturer's species option] [LPDL melamine surface] .

2.11.3.1.2 [AWMAC AWS Premium grade: [prefinished seven or nine ply hardwood veneer core with no internal voids] [prefinished solid hardwood] [12] [16] thickness] .

- 2.11.3.2 Bottoms: [MDF with melamine surfaces] [Hardwood plywood of same species as drawer sides] [Tempered hardboard] , [6] mm thick.

- 2.11.3.3 Joinery: Meeting requirements of AWMAC AWS for Grade specified.

2.11.3.3.1 Sides, front and back: [Miter fold] [Biscuit splined] [Dowel screwed] [Nailed lock joints] [Doweled] [Multiple dovetailed]

2.11.3.3.2 Drawer bottoms [fully housed into sides and sub front and mechanically fastened to back or plowed into back] [held in place with drawer hardware to sides and mechanically fastened to back and sub front] .

2.12 Shop Applied Finish Coatings

- 2.12.1 Finish system: AWMAC AWS system:

2.12.1.1 Include [stain] [wash coat] [filler] .

- 2.12.2 Apply finish system component materials in accordance with manufacturer's instructions.

2.13 Cabinet Hardware

- 2.13.1 Cabinet hardware: to AWMAC AWS quality grade specified and to ANSI/BHMA A156.9, designated by letter B and numeral identifiers as listed below.
- 2.13.2 Finish:
- 2.13.2.1 Exposed hardware.
- 2.13.2.2 Semi-exposed hardware: [Manufacturer's standard finish].
- 2.13.3 Casework door hinges: type as indicated on drawings.
- 2.13.4 Other hinges: [butt] [olive knuckle] [pivot] [continuous] [self-closing] [semi-concealed] [concealed] [full surface] hinge, type []
- 2.13.5 Pulls: type as indicated on drawings
- 2.13.6 Knobs: type as indicated on drawings
- 2.13.7 Latches: type as indicated on drawings
- 2.13.8 Catches: type as indicated on drawings.
- 2.13.9 Shelf rests [and standards] : type as indicated on drawings.
- 2.13.10 Shelf brackets [and standards] : as indicated on drawings.
- 2.13.11 Drawer slides:
- 2.13.11.1 Slide type: [side mounted] [bottom center mounted] [center top mounted] [bottom edge mounted] drawer slides, type as indicated on drawings.
- 2.13.11.2 Extension and capacity: [full extension] [¾ extension] [over extension] meeting requirements of AWMAC AWS for type and size of drawer.
- 2.13.11.3 File drawer slides: full extension.
- 2.13.12 Pull up shelf supports: adjustable tension, lock in up position self supports, type [B06033] .
- 2.13.13 Track and guides for sliding panels: [recessed] [surface] mounted [with anti-friction inserts] , type as indicated on drawings.

2.14 Cabinet Locks

- 2.14.1 Provide locks [at all cabinet doors and drawers] [as shown on elevations] .
- 2.14.2 Cabinet locks: to ANSI/BHMA A156.11, designated by letter E and numeral identifiers as listed below.
- 2.14.2.1 Door or drawer locks: [surface mounted] [half mortised into back of door or drawer] , type as indicated on drawings.

- 2.14.2.2 Sliding door locks: type as indicated on drawings.
- 2.14.2.3 Glass door locks: type as indicated on drawings. Elbow catches: at all double doors with locks.
- 2.14.3 Keying: [Each room keyed alike] [Keyed as scheduled] [All locks keyed alike] .
 - 2.14.3.1 Stamp keying code numbers on keys and cylinders.
- 2.14.4 Finished as indicated on drawings.

2.15 Accessories

- 2.15.1 Wood screws: [stainless steel] [steel] [brass] [plain] [copper] , type and size to suit application.
- 2.15.2 Nails and staples: to CSA B111 and ASTM F1667.
- 2.15.3 Splines: [plastic] [wood] [metal] .
- 2.15.4 Sealant: in accordance with [Section 07 92 00- Joint Sealants] .

2.16 Laminated Plastic Countertops

- 2.16.1 Laminated plastic for flatwork: to NEMA LD3.
 - 2.16.1.1 Type: general purpose.
 - 2.16.1.2 Grade: [HGS] [HGL] .
 - 2.16.1.3 Size: [1.2] [1.0] mm thick.
 - 2.16.1.4 Colour: [integral colour throughout] , [multilayered] .
 - 2.16.1.5 Pattern: [metallic] [printed pattern] [solid] [woodgrain] .
 - 2.16.1.6 Finish: [gloss] [textured] [embossed] [furniture] [satin] [matt] .
- 2.16.2 Laminated plastic for post-forming work: to NEMA LD3.
 - 2.16.2.1 Type: post-forming.
 - 2.16.2.2 Grade: [HGL] [HGS] .
 - 2.16.2.3 Size: [0.76] [1.016] mm thick.
 - 2.16.2.4 Colour: [integral colour throughout] , [multilayered] .
 - 2.16.2.5 Pattern: [woodgrain] [metallic] [printed pattern] [solid] .
 - 2.16.2.6 Finish: [gloss] [furniture] [textured] [embossed] [matt] [satin] .
- 2.16.3 Core material: [MDF] [particleboard] [exterior grade hardwood plywood with a non-telegraphing grain] .
 - 2.16.3.1 Countertops to receive plumbing fixtures: [Veneer core plywood with type II adhesive] [Water resistant particle board] [Water resistant MDF] .
- 2.16.4 Back splashes: [butt joint] [cove] [per drawings].

- 2.16.5 Front edges: [wood edge] [self-edge] [waterfall edge] [3 mm PVC edge] [no drip bullnose edge] [no drip tilt edge] [As shown on plans] .

3. EXECUTION

3.1 Examination

- 3.1.1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for architectural woodwork installation in accordance with manufacturer's instructions.
- 3.1.1.1 Visually inspect substrate in presence of Consultant.
- 3.1.1.2 Inform Consultant of unacceptable conditions immediately upon discovery.
- 3.1.1.3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Consultant.

3.2 Installation

- 3.2.1 Install architectural wood casework in accordance with AWMAC AWS grade for respective items.
- 3.2.2 In case of conflict between Contract Documents and AWMAC AWS grade requirements, Contract Documents govern.
- 3.2.3 Install prefinished millwork at locations shown on drawings.
- 3.2.3.1 Position accurately, level, plumb straight.
- 3.2.4 Fasten and anchor millwork securely.
- 3.2.4.1 Supply and install heavy duty fixture attachments for wall mounted cabinets.
- 3.2.5 Countersink mechanical fasteners at exposed and semi-exposed surfaces, excluding installation attachment screws and screws securing cabinets end to end.
- 3.2.6 Use draw bolts in countertop joints.
- 3.2.7 Scribe and cut as required to fit abutting walls and to fit properly into recesses and to accommodate piping, columns, fixtures, outlets or other projecting, intersecting or penetrating objects.
- 3.2.8 At junction of plastic laminate counter back splash and adjacent wall finish, apply small bead of sealant in accordance with Section [07 92 00- Joint Sealants] .
- 3.2.9 Apply moisture barrier between wood framing members and masonry or cementitious construction.
- 3.2.10 Fit hardware accurately and securely in accordance with manufacturer's written instructions.

- 3.2.11 Make cutouts for inset equipment and fixtures using templates provided.

3.3 Cleaning

- 3.3.1 Progress Cleaning: clean in accordance with Section [01 74 00- Cleaning] .
 - 3.3.1.1 Leave Work area clean at end of each day.
- 3.3.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section [01 74 00- Cleaning] .
 - 3.3.2.1 Clean [outside surfaces] [millwork] [cabinet work] [inside cupboards [drawers]] .
 - 3.3.2.2 Remove excess glue, pencil and ink marks from surfaces.
- 3.3.3 Waste Management: separate waste materials for [recycling] [reuse] in accordance with Section [01 74 19- Waste Management and Disposal].

3.4 Protection

- 3.4.1 Protect [cabinet work] [millwork] from damage until [final inspection] .
- 3.4.2 Protect installed products and components from damage during construction.
- 3.4.3 Repair damage to adjacent materials caused by architectural woodwork installation.
- 3.4.4 Leave work to be site finished ready for finishing by [Section 09 91 23].

END OF SECTION

1. **GENERAL**

1.1 **Section Includes:**

1.1.1 Counter tops for copy/print areas.

1.2 **Related Sections:**

1.2.1 Section 01 74 19 - Waste Management and Disposal.

1.2.2 Section 06 40 00 - Architectural Woodwork.

1.2.3 Section 07 92 00 - Joint Sealants.

1.3 **References**

1.3.1 Abbreviations and Acronyms:

1.3.1.1 MDF: Medium Density Fiberboard.

1.3.1.2 SCAQMD: South Coast Air Quality Management District;
www.aqmd.gov.

1.3.1.3 VOC: Volatile Organic Compound.

1.3.2 Definitions:

1.3.2.1 Solid Surface: Non-porous, homogeneous material maintaining the same composition throughout the part with a composition of acrylic polymer, aluminum trihydrate filler and pigment.

1.3.3 Reference Standards:

1.3.3.1 ANSI/NPA A208.2-09 - Medium Density Fiberboard (MDF) For Interior Applications

1.3.3.2 ASTM C920-14a - Standard Specification for Elastomeric Joint Sealants

1.3.3.3 ASTM D638-10 - Standard Test Method for Tensile Properties of Plastics

1.3.3.4 ASTM D785-08 - Standard Test Method for Rockwell Hardness of Plastics and Electrical Insulating Materials

1.3.3.5 ASTM D790-10 - Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials

1.3.3.6 ASTM D5420-10 - Standard Test Method for Impact Resistance of Flat, Rigid Plastic Specimen by Means of a Striker Impacted by a Falling Weight (Gardner Impact)

1.3.3.7 ASTM E84-14 - Standard Test Method for Surface Burning Characteristics of Building Materials

1.3.3.8 ASTM E228-11- Standard Test Method for Linear Thermal Expansion of Solid Materials with a Push-Rod Dilatometer

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- 1.3.3.9 ASTM G21-13 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi
- 1.3.3.10 ASTM G22-76(96) - Standard Practice for Determining Resistance of Plastics to Bacteria
- 1.3.3.11 ASTM G155-13 - Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials
- 1.3.3.12 CSA B45.5-11/IAPMO Z124-2011 - Plastic Plumbing Fixtures
- 1.3.3.13 NFPA 255-06 - Standard Method of Test of Surface Burning Characteristics of Building Materials
- 1.3.3.14 NSF/ANSI 51-07- Food Equipment Materials
- 1.3.3.15 SCAQMD Rule 1168 - Adhesive and Sealant Applications (amended January 2005)
- 1.3.3.16 UL 723- Standard for Test for Surface Burning Characteristics of Building Materials
- 1.3.3.17 UL Environment/- Standard for Chemical Emissions for Building Materials, GREENGUARD-Finishes and Furnishings, Section 7.1
UL 2818
- 1.3.3.18 UL Environment/- Gold Standard for Chemical Emissions for Building Materials, GREENGUARD - Finishs and Furnishings, Section 7.1 and 7.2
UL 2818
- 1.3.3.19 UL 2824 - GREENGUARD Certification Program, Method for Measuring Microbial Resistance from Various Sources Using Static Environmental Chambers

1.4 Administrative Requirements

- 1.4.1 Preinstallation Meetings: Arrange preinstallation meeting 1 week prior to commencing work with all parties associated with trade as designated in Contract Documents or as requested by Architect. Presided over by Contractor, include Architect who may attend, Subcontractor performing work of this trade, Owner's representative, testing company's representative and consultants of applicable discipline. Review Contract Documents for work included under this trade 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 work and other matters affecting construction, to permit compliance with intent of work of this Section.

1.5 Submittals

- 1.5.1 Product Data: Indicate Product description including solid surface sheets, sinks, bowls and illustrating full range of standard colors, fabrication information and compliance with specified performance requirements. Submit Product data with resistance to list of chemicals.
- 1.5.2 Shop Drawings: Submit Shop Drawings for work of this Section in accordance with Section 01 30 00. Indicate plans, sections, dimensions, component sizes, edge details, thermosetting requirements, fabrication details, attachment provisions, sizes of furring, blocking, including concealed blocking and coordination requirements with adjacent work. Show locations and sizes of cutouts and holes for plumbing fixtures, faucets, soap dispensers, waste receptacles and other items installed in solid surface.
- 1.5.3 Coordination Drawings: Submit coordination drawings indicating plumbing and miscellaneous steel work indicating locations of wall rated or non-rated, blocking requirements, locations and recessed wall items and similar items.
- 1.5.4 Samples: Submit samples in accordance with Section 01 30 00. Submit minimum 6" x 6" samples. Cut sample and seam together for representation of inconspicuous seam. Indicate full range of color and pattern variation. Approved samples will be retained as standards for work.
- 1.5.5 Test and Evaluation Reports: Submit flammability test reports [and food preparation zone certifications/listing confirming compliance with NSF/ANSI 51. Refer to www.nsf.org for the latest compliance to NSF/ANSI 51 for Food Zone — all food types.]

1.6 Closeout Submittals

- 1.6.1 Operational and Maintenance Data:
 - 1.6.1.1 Submit manufacturer's care and maintenance data, including repair and cleaning instructions. Include in Project closeout documents.
 - 1.6.1.2 Provide a commercial care and maintenance kit and video. Review maintenance procedures and warranty details with Owner upon completion.

1.7 Quality Assurance

- 1.7.1 Qualifications:
 - 1.7.1.1 Installers: 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 the Product manufacturers.

- 1.7.2 Mock-Ups:
 - 1.7.2.1 Prior to final approval of Shop Drawings, erect 1 full size mock-up of each component at Project site demonstrating quality of materials and execution for Architect review.
 - 1.7.2.2 Should mock-up not be approved, rework or remake until approval is secured. Remove rejected units from Project site.
 - 1.7.2.3 Approved mock-up will be used as standard for acceptance of subsequent work.
 - 1.7.2.4 Approved mock-ups may remain as part of finished work.

1.8 Delivery, Storage And Handling

- 1.8.1 Delivery and Acceptance Requirements: Deliver no components to Project site until areas are ready for installation.
- 1.8.2 Storage and Handling Requirements:
 - 1.8.2.1 Store components indoors prior to installation.
 - 1.8.2.2 Handle materials to prevent damage to finished surfaces.

1.9 Warranty

- 1.9.1 Manufacturer Warranty: Provide manufacturer's standard warranty for material only for period of 10 years against defects and/or deficiencies in accordance with General Conditions of the Contract. Promptly correct any defects or deficiencies which become apparent within warranty period, to satisfaction of Architect and at no expense to Owner.

2. PRODUCTS

2.1 Manufacturers

- 2.1.1 Refer to Drawings, Interior Materials and Finishes Schedule
- 2.1.2 Requests for substitutions will be considered in accordance with provisions of Section 01 25 00 Substitution Procedures.

2.2 Solid Surface Material:

- 2.2.1 Non-porous, homogeneous material maintaining the same composition throughout the part with a composition of acrylic polymer, aluminum trihydrate filler and pigment; not coated, laminated or of composite construction; meeting following criteria:
- 2.2.2 Flammability: Class 1 and A when tested to UL 723.
- 2.2.3 Adhesive for Bonding to Other Products: One component silicone to ASTM C920.

- 2.2.4 Sealant: A standard mildew-resistant, FDA/UL® [and NSF/ANSI 51 compliant in Food Zone area,] recognized silicone color matched sealant or clear silicone sealants.
- 2.2.5 Heat Reflecting Tape: Manufacturer's standard aluminum foil tape, with required thickness, for use with cutouts near heat sources.
- 2.2.6 Insulating Nomex® Fabric: Manufacturer's standard for use with conductive tape in insulating solid surface material from adjacent heat source.

2.3 Fabrication:

- 2.3.1 Fabricate components in shop to greatest extent practical to sizes and shapes indicated, in accordance with approved Shop Drawings and solid polymer manufacturer requirements. Form joints between components using manufacturer's standard joint adhesive without conspicuous joints. Provide factory cutouts for plumbing fittings and bath accessories as indicated on Drawings.
- 2.3.2 Where indicated, thermoform corners and edges or other objects to shapes and sizes indicated on Drawings, prior to seaming and joining. Cut components larger than finished dimensions and sand edges to remove nicks and scratches. Heat entire component uniformly prior to forming.
- 2.3.3 Ensure no blistering, whitening and cracking of components during forming.
- 2.3.4 Fabricate backsplashes from solid surfacing material with optional radius cove where counter and backsplashes meet as indicated on Drawings. Backsplashes for most colors may be fabricated by traditional means discussed in K-25294 *Backsplashes*. Colors with metallic/mica particle or veined colors creating directional aesthetics (K-26833 *Directional Aesthetics*) may require the techniques in Technical Bulletin K-28235 *Thermoformed Backsplash*.
- 2.3.5 Fabricate joints between components using manufacturer's standard joint adhesive. Ensure joints are inconspicuous in appearance and without voids. Attach 50 mm (2") wide reinforcing strip of solid polymer material under each joint. Reinforcing strip of solid polymer material is not required when using DuPont™ Joint Adhesive 2.0.
- 2.3.6 Provide holes and cutouts for plumbing and bath accessories as indicated on Drawings.
- 2.3.7 Rout and finish component edges to a smooth, uniform finish. Rout cutouts, then sand edges smooth. Repair or reject defective or inaccurate work.
- 2.3.8 Finish: Ensure surfaces have uniform finish, as indicated on drawing
- 2.3.9 Fabrication Tolerances:

- 2.3.9.1 Variation in Component Size: +/-1/8".
- 2.3.9.2 Location of Openings: +/-1/8" from indicated location.

3. **EXECUTION**

3.1 **Examination**

- 3.1.1 Verification of Conditions:
 - 3.1.1.1 Examine substrates and conditions, with fabricator present for compliance with requirements for installation tolerances and other conditions affecting performance of work. Proceed with installation only after unsatisfactory conditions have been corrected.
 - 3.1.1.2 Verify actual site dimensions and location of adjacent materials prior to commencing work.
 - 3.1.1.3 Examine cabinets upon which counter tops are to be installed. Verify cabinets are level to within 1/8" in 10' - 0".
 - 3.1.1.4 Notify Architect in writing of any conditions which would be detrimental to installation.
- 3.1.2 Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

3.2 **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 Fabricate field joints using manufacturer's recommended adhesive, with joints being inconspicuous in finished work. Exposed joints/seams are not permitted. Keep components and hands clean when making joints. Reinforce field joints as specified herein. Cut and finish component edges with clean, sharp returns.
- 3.2.3 Route radii and contours to template. Anchor securely to base component or other supports. Align adjacent components and form seams to comply with manufacturer's written recommendations using adhesive in color to match work. Carefully dress joints smooth, remove surface scratches and clean entire surface.
- 3.2.4 Install countertops with no more than 1/8" sag, bow or other variation from a straight line.
- 3.2.5 Seal between wall and components with joint sealant as specified herein and in Section 07 92 00, as applicable.
- 3.2.6 Provide backsplashes and endsplashes as indicated on Drawings. Adhere to countertops using a standard color-coordinated silicone sealant. Adhere applied sidesplashes to countertops using a standard

color-matched silicone sealant. Provide coved backsplashes and sidesplashes at walls and adjacent millwork. Fabricate radius cove at intersection of counters with backsplashes to dimensions shown on reviewed Shop Drawings. Adhere to countertops using manufacturer's standard color-coordinated joint adhesive.

- 3.2.7 Keep components and hands clean during installation. Remove adhesives, sealants and other stains. Ensure components are clean on date of Substantial Completion of the Work.

3.3 Repair

- 3.3.1 Repair minor imperfections and cracked seams and replace areas of severely damaged surfaces in accordance with manufacturer's "Technical Bulletins".

3.4 Site Quality Control

- 3.4.1 Non-Conforming Work: Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction of Architect at no cost to Owner.

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.
- 3.6.2 Protect surfaces from damage until date of Substantial Completion of the Work.

END OF SECTION

1. GENERAL

1.1 Reference Standards

- 1.1.1 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - 1.1.1.1 Material Safety Data Sheets (MSDS).
- 1.1.2 National Research Council Canada (NRC)
 - 1.1.2.1 National Building Code of Canada [2015] (NBC).
- 1.1.3 Underwriter's Laboratories of Canada (ULC)
 - 1.1.3.1 ULC-S115-[1995] , Fire Tests of Fire stop Systems.

1.2 Definitions

- 1.2.1 Fire Stop Material: device intended to close off opening or penetration during fire or materials that fill openings in wall or floor assembly where penetration is by cables, cable trays, conduits, ducts and pipes and poke-through termination devices, including electrical outlet boxes along with their means of support through wall or floor openings.
- 1.2.2 Single Component Fire Stop System: fire stop material that has Listed Systems Design and is used individually without use of high temperature insulation or other materials to create fire stop system.
- 1.2.3 Multiple Component Fire Stop System: exact group of fire stop materials that are identified within Listed Systems Design to create on site fire stop system.
- 1.2.4 Tightly Fitted; (ref: NBC Part 3.1.9.1(1) and 9.10.9.6(1)): penetrating items that are cast in place in buildings of non-combustible construction or have "0" annular space in buildings of combustible construction.
 - 1.2.4.1 Words "tightly fitted" should ensure that integrity of fire separation is such that it prevents passage of smoke and hot gases to unexposed side of fire separation.

1.3 Action And Informational Submittals

- 1.3.1 Provide submittals in accordance with Section [01 33 00- Submittal Procedures] .
- 1.3.2 Product Data:
 - 1.3.2.1 Submit manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.

- 1.3.2.2 Submit [two] copies of WHMIS MSDS - Material Safety Data Sheets in accordance with Section [02 81 01- Hazardous Materials] .
- 1.3.3 Shop Drawings:
 - 1.3.3.1 Submit shop drawings to show [location,] proposed material, reinforcement, anchorage, fastenings and method of installation.
 - 1.3.3.2 Construction details should accurately reflect actual job conditions.
- 1.3.4 Samples:
 - 1.3.4.1 Submit duplicate 300 x 300 mm samples showing actual fire stop material proposed for project.
- 1.3.5 Quality assurance submittals: submit following in accordance with Section [01 45 00- Quality Control] .
 - 1.3.5.1 Test reports: in accordance with CAN-ULC-S101 for fire endurance and CAN-ULC-S102 for surface burning characteristics.
 - 1.3.5.1.1 Submit certified test reports from approved independent testing laboratories, indicating compliance of applied fire stopping with specifications for specified performance characteristics and physical properties.
 - 1.3.5.2 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
 - 1.3.5.3 Manufacturer's Instructions: submit manufacturer's installation instructions and special handling criteria, installation sequence, cleaning procedures and,
 - 1.3.5.4 Manufacturer's Field Reports: submit to manufacturer's written reports within [3] days of review, verifying compliance of Work, as described in PART 3 - FIELD QUALITY CONTROL.

1.4 Quality Assurance

- 1.4.1 Qualifications:
 - 1.4.1.1 Installer: [company] [person] specializing in [fire stopping] installations [approved by manufacturer] [with [5] [documented] experience] .
- 1.4.2 Pre-Installation Meetings: convene pre-installation meeting [one] week prior to beginning [work of this Section] , with Consultant in accordance with [Section 01 32 16.07- Construction Progress Schedule - Bar (GANTT) Chart; [Section [01 32 16.06- Construction Progress Schedule - Critical Path Method (CPM)]] to:

- 1.4.2.1 Verify project requirements.
 - 1.4.2.2 Review installation and substrate conditions.
 - 1.4.2.3 Co-ordination with other building subtrades.
 - 1.4.2.4 Review [manufacturer's] installation instructions and warranty requirements.
- 1.4.3 Site Meetings: as part of Manufacturer's Services described in PART 3 - FIELD QUALITY CONTROL, schedule site visits, to review Work, at stages listed.
 - 1.4.3.1 After delivery and storage of products, and when preparatory Work is complete, but before installation begins.
 - 1.4.3.2 [Twice] during progress of Work at [25%] and [60%] complete.
 - 1.4.3.3 Upon completion of Work, after cleaning is carried out.

1.5 Delivery, Storage And Handling

- 1.5.1 Packing, shipping, handling and unloading:
 - 1.5.1.1 Deliver, store and handle materials in accordance with Section [01 61 00- Common Product Requirements] .
 - 1.5.1.2 Deliver, store and handle materials in accordance with manufacturer's written instructions.
 - 1.5.1.3 Deliver materials to the site in undamaged condition and in original unopened containers, marked to indicate [brand name] , [manufacturer] , [ULC markings] .
- 1.5.2 Storage and Protection:
 - 1.5.2.1 Store materials [indoors] [in dry location] and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - 1.5.2.2 Replace defective or damaged materials with new.
- 1.5.3 Waste Management and Disposal:
 - 1.5.3.1 Separate waste materials for [reuse] [recycling] in accordance with Section [01 74 19- Waste Management and Disposal] .

2. PRODUCTS

2.1 Sustainable Requirements

- 2.1.1 Materials and products in accordance with Section [01 47 15- Sustainable Requirements: Construction] .
- 2.1.2 Do verification requirements in accordance with Section [01 47 17- Sustainable Requirements: Contractor's Verification] .

2.2 Materials

- 2.2.1 Fire stopping and smoke seal systems: in accordance with CAN-ULC-S115.
 - 2.2.1.1 Asbestos-free materials and systems capable of maintaining effective barrier against flame, smoke and gases in compliance with requirements of CAN-ULC-S115 and not to exceed opening sizes for which they are intended [and conforming to specified special requirements described in PART 3] .
 - 2.2.1.2 Fire stop system rating
- 2.2.2 Service penetration assemblies: systems tested to CAN-ULC-S115.
- 2.2.3 Service penetration fire stop components: certified by test laboratory to CAN-ULC-S115.
- 2.2.4 Fire-resistance rating of installed fire stopping assembly in accordance with NBC.
- 2.2.5 Fire stopping and smoke seals at openings intended for ease of re-entry such as cables: elastomeric seal.
- 2.2.6 Fire stopping and smoke seals at openings around penetrations for pipes, ductwork and other mechanical items requiring sound and vibration control: elastomeric seal.
- 2.2.7 Primers: to manufacturer's recommendation for specific material, substrate, and end use.
- 2.2.8 Water (if applicable): potable, clean and free from injurious amounts of deleterious substances.
- 2.2.9 Damming and backup materials, supports and anchoring devices: to manufacturer's recommendations, and in accordance with tested assembly being installed as acceptable to authorities having jurisdiction.
- 2.2.10 Sealants for vertical joints: non-sagging.

3. EXECUTION

3.1 Manufacturer's Instructions

- 3.1.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 Preparation

- 3.2.1 Examine sizes and conditions of voids to be filled to establish correct thicknesses and installation of materials.
 - 3.2.1.1 Ensure that substrates and surfaces are clean, dry and frost free.

- 3.2.2 Prepare surfaces in contact with fire stopping materials and smoke seals to manufacturer's instructions.
- 3.2.3 Maintain insulation around pipes and ducts penetrating fire separation [without interruption to vapour barrier] .
- 3.2.4 Mask where necessary to avoid spillage and over coating onto adjoining surfaces; remove stains on adjacent surfaces.

3.3 Installation

- 3.3.1 Install fire stopping and smoke seal material and components in accordance with manufacturer's certified tested system listing.
- 3.3.2 Seal holes or voids made by through penetrations, poke-through termination devices, and unpenetrated openings or joints to ensure continuity and integrity of fire separation are maintained.
- 3.3.3 Provide temporary forming as required and remove forming only after materials have gained sufficient strength and after initial curing.
- 3.3.4 Tool or trowel exposed surfaces to neat finish.
- 3.3.5 Remove excess compound promptly as work progresses and upon completion.

3.4 Sequences Of Operation

- 3.4.1 Proceed with installation only when submittals have been reviewed by Consultant.
- 3.4.2 Install floor fire stopping before interior partition erections.
- 3.4.3 Metal deck bonding: fire stopping to precede spray applied fireproofing to ensure required bonding.
- 3.4.4 Mechanical pipe insulation: [certified] fire stop system component.
 - 3.4.4.1 Ensure pipe insulation installation precedes fire stopping.

3.5 Field Quality Control

- 3.5.1 Inspections: notify Consultant when ready for inspection and prior to concealing or enclosing fire stopping materials and service penetration assemblies.
- 3.5.2 Manufacturer's Field Services:
 - 3.5.2.1 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product and submit Manufacturer's Field Reports as described in PART 1 - SUBMITTALS.
 - 3.5.2.2 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection

of product installation in accordance with manufacturer's instructions.

- 3.5.2.3 Schedule site visits, to review Work, as directed in PART 1 - QUALITY ASSURANCE.

3.6 Cleaning

- 3.6.1 Proceed in accordance with Section [01 74 11- Cleaning] .
- 3.6.2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.
- 3.6.3 Remove temporary dams after initial set of fire stopping and smoke seal materials.

3.7 Schedule

- 3.7.1 Fire stop and smoke seal at:
 - 3.7.1.1 Penetrations through fire-resistance rated masonry, concrete, and gypsum board partitions and walls.
 - 3.7.1.2 Edge of floor slabs at curtain wall and precast concrete panels.
 - 3.7.1.3 Top of fire-resistance rated masonry and gypsum board partitions.
 - 3.7.1.4 Intersection of fire-resistance rated masonry and gypsum board partitions.
 - 3.7.1.5 Control and sway joints in fire-resistance rated masonry and gypsum board partitions and walls.
 - 3.7.1.6 Penetrations through fire-resistance rated floor slabs, ceilings and roofs.
 - 3.7.1.7 Openings and sleeves installed for future use through fire separations.
 - 3.7.1.8 Around mechanical and electrical assemblies penetrating fire separations.
 - 3.7.1.9 Rigid ducts: greater than [129 cm²] : fire stopping to consist of bead of fire stopping material between retaining angle and fire separation and between retaining angle and duct, on each side of fire separation.

END OF SECTION

1. GENERAL

1.1 Reference Standards

- 1.1.1 ASTM International
 - 1.1.1.1 ASTM C919-[08] , Standard Practice for Use of Sealants in Acoustical Applications.
- 1.1.2 Canada Green Building Council (CaGBC)
- 1.1.3 Canadian General Standards Board (CGSB)
 - 1.1.3.1 CGSB 19-GP-5M-[1984] , Sealing Compound, One Component, Acrylic Base, Solvent Curing (Issue of 1976 reaffirmed, incorporating Amendment No. 1).
 - 1.1.3.2 CAN/CGSB-19.13-[M87] , Sealing Compound, One-component, Elastomeric, Chemical Curing.
 - 1.1.3.3 CGSB 19-GP-14M-[1984] , Sealing Compound, One Component, Butyl-Polyisobutylene Polymer Base, Solvent Curing (Reaffirmation of April 1976).
 - 1.1.3.4 CAN/CGSB-19.17-[M90] , One-Component Acrylic Emulsion Base Sealing Compound.
 - 1.1.3.5 CAN/CGSB-19.24-[M90] , Multi-component, Chemical Curing Sealing Compound.
- 1.1.4 General Services Administration (GSA) - Federal Specifications (FS)
 - 1.1.4.1 FS-SS-S-200-[E(2)1993] , Sealants, Joint, Two-Component, Jet-Blast-Resistant, Cold Applied, for Portland Cement Concrete Pavement.
- 1.1.5 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - 1.1.5.1 Material Safety Data Sheets (MSDS).
- 1.1.6 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
 - 1.1.6.1 SCAQMD Rule 1168-[A2005] , Adhesives and Sealants Applications.

1.2 Action And Informational Submittals

- 1.2.1 Submit in accordance with Section [01 33 00- Submittal Procedures] .
- 1.2.2 Product Data:
 - 1.2.2.1 Submit manufacturer's instructions, printed product literature and data sheets for [joint sealants] and include product characteristics, performance criteria, physical size, finish and limitations.
 - 1.2.2.2 Manufacturer's product to describe:
 - 1.2.2.2.1 Caulking compound.

1.2.2.2.2 Primers.

1.2.2.2.3 Sealing compound, each type, including compatibility when different sealants are in contact with each other.

1.2.2.3 Submit [2] copies of WHMIS MSDS in accordance with Section [01 35 43- Environmental Procedures] [01 35 29.06- Health and Safety Requirements] .

1.2.3 Samples:

1.2.3.1 Submit [2] samples of each type of material and colour.

1.2.3.2 Cured samples of exposed sealants for each colour where required to match adjacent material.

1.2.4 Manufacturer's Instructions:

1.2.4.1 Submit instructions to include installation instructions for each product used.

1.3 **Closeout Submittals**

1.3.1 Submit in accordance with Section [01 78 00- Closeout Submittals] .

1.3.2 Operation and Maintenance Data: submit operation and maintenance data for incorporation into manual.

1.4 **Delivery, Storage And Handling**

1.4.1 Deliver, store and handle materials in accordance with Section [with manufacturer's written instructions] [01 61 00- Common Product Requirements] .

1.4.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

1.4.3 Storage and Handling Requirements:

1.4.3.1 Store materials [indoors] [off ground] [in dry location] and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

1.4.3.2 Store and protect [joint sealants] from [nicks, scratches, and blemishes] .

1.4.3.3 Replace defective or damaged materials with new.

1.5 **Site Conditions**

1.5.1 Ambient Conditions:

1.5.1.1 Proceed with installation of joint sealants only when:

1.5.1.1.1 Ambient and substrate temperature conditions are within limits permitted by joint sealant manufacturer or are above 4.4 degrees C.

- 1.5.1.1.2 Joint substrates are dry.
- 1.5.1.1.3 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

1.5.2 Joint-Width Conditions:

- 1.5.2.1 Proceed with installation of joint sealants only where joint widths are more than those allowed by joint sealant manufacturer for applications indicated.

1.5.3 Joint-Substrate Conditions:

- 1.5.3.1 Proceed with installation of joint sealants only after contaminants capable of interfering with adhesion are removed from joint substrates.

1.6 Environmental Requirements

- 1.6.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of Material Safety Data Sheets (MSDS) acceptable to Health Canada.
- 1.6.2 Consultant outdoor air and exhaust during installation of caulking and sealants.] Ventilate area of work as directed by Consultant by use of approved portable supply and exhaust fans.

2. PRODUCTS

2.1 Sealant Materials

- 2.1.1 Do not use caulking that emits strong odours, contains toxic chemicals or is not certified as mould resistant in air handling units.
- 2.1.2 When low toxicity caulks are not possible, confine usage to areas which off gas to exterior, are contained behind air barriers, or are applied several months before occupancy to maximize off gas time.
- 2.1.3 Where sealants are qualified with primers use only these primers.

2.2 Sealant Material Designations

- 2.2.1 Polysulfide two part:
 - 2.2.1.1 Self-levelling to CAN/CGSB-19.24, Type 1, Class B, colour as indicated on drawings.
- 2.2.2 Polysulfide two part:
 - 2.2.2.1 Non-sag: to CAN/CGSB-19.24, Type 2, Class B, colour as indicated on drawings.
- 2.2.3 Polysulfide one part:

- 2.2.3.1 Self-levelling: to CAN/CGSB-19.13, [MC-1-40-B-N] [MC-1-25-B-N] , colour as indicated on drawings.
- 2.2.4 Polysulfide one part:
 - 2.2.4.1 Non-sag: to CAN/CGSB-19.13, [MC-2-25-B-N] [MC-2-40-B-N] , colour as indicated on drawings.
- 2.2.5 Urethanes two part:
 - 2.2.5.1 Self-levelling: to CAN/CGSB-19.24, Type 1, Class B, colour as indicated on drawings.
- 2.2.6 Urethanes two part:
 - 2.2.6.1 Non-sag: to CAN/CGSB-19.24, Type 2, Class B, colour as indicated on drawings.
- 2.2.7 Urethanes one part:
 - 2.2.7.1 Self-levelling: to CAN/CGSB-19.13, Type 1, colour as indicated on drawings.
- 2.2.8 Urethanes one part:
 - 2.2.8.1 Non-sag: to CAN/CGSB-19.13, Type 2, [MCG-2-40] [MCG-2-25] , colour as indicated on drawings.
- 2.2.9 Silicones one part: to CAN/CGSB-19.13.
- 2.2.10 Acrylics one part: to CGSB 19-GP-5M.
- 2.2.11 Acrylic latex one part: to CAN/CGSB-19.17.
- 2.2.12 Acoustical sealant: to ASTM C919.
- 2.2.13 Butyl: to CGSB 19-GP-14M.
- 2.2.14 Oil-based: as indicated on drawings.
- 2.2.15 Modified oil-based: as indicated on drawings.
- 2.2.16 Aviation fuel resistant: to FS-SS-S-200E [Type 2] .
- 2.2.17 Preformed compressible and non-compressible back-up materials:
 - 2.2.17.1 Polyethylene, urethane, neoprene or vinyl foam:
 - 2.2.17.1.1 Extruded [closed] [open] cell foam backer rod.
 - 2.2.17.1.2 Size: oversize [30 to 50 %] .
 - 2.2.17.1.3 Neoprene or butyl rubber:
 - 2.2.17.1.4 Round solid rod, Shore A hardness 70.
 - 2.2.17.2 High density foam:
 - 2.2.17.2.1 Extruded closed cell polyvinyl chloride (PVC), extruded polyethylene, closed cell, Shore A hardness 20, tensile strength 140 to 200 kPa, extruded polyolefin foam, 32

kg/m³ density, or neoprene foam backer,
size as recommended by manufacturer.

2.2.17.2.2 Bond breaker tape:

2.2.17.2.3 Polyethylene bond breaker tape which will not bond to
sealant.

2.3 Sealant Selection

- 2.3.1 Perimeters of exterior openings where frames meet exterior facade of building (i.e. brick, block, precast masonry): sealant type: as indicated on drawings.
- 2.3.2 Expansion and control joints in exterior surfaces of poured-in-place concrete walls: sealant type:
- 2.3.3 Expansion and control joints in exterior surfaces of precast, architectural wall panels: sealant type: as indicated on drawings.
- 2.3.4 Control and expansion joints in exterior surfaces of unit masonry walls: sealant type: as indicated on drawings.
- 2.3.5 Coping joints and coping-to facade joints: sealant type: as indicated on drawings.
- 2.3.6 Cornice and wash (or horizontal surface joints): sealant type: as indicated on drawings.
- 2.3.7 Exterior joints in horizontal wearing surfaces (as itemized): sealant type: as indicated on drawings.
- 2.3.8 Seal interior perimeters of exterior openings as detailed on drawings: sealant type: as indicated on drawings.
- 2.3.9 Control and expansion joints on the interior of exterior poured-in place concrete walls: sealant type: as indicated on drawings.
- 2.3.10 Expansion and control joints on the interior of exterior precast, architectural wall panels: sealant type:
- 2.3.11 Joints of underside of precast beams or planks: sealant type: as indicated on drawings.
- 2.3.12 Control and expansion joints on the interior of exterior surfaces of unit masonry walls: sealant type: as indicated on drawings.
- 2.3.13 Interior control and expansion joints in floor surfaces: sealant type: as indicated on drawings.
- 2.3.14 Perimeters of interior frames, as detailed and itemized: sealant type: as indicated on drawings.
- 2.3.15 Interior masonry vertical control joints (block-to-block, block-to-concrete, and intersecting masonry walls): sealant type: as indicated on drawings.

- 2.3.16 Joints at tops of non-load bearing masonry walls at the underside of poured concrete: sealant type:
- 2.3.17 Perimeter of bath fixtures (e.g. sinks, tubs, urinals, stools, water closets, basins, vanities): sealant type: as indicated on drawings.
- 2.3.18 Exposed interior control joints in drywall: sealant type: as indicated on drawings.

2.4 Joint Cleaner

- 2.4.1 Non-corrosive and non-staining type, compatible with joint forming materials and sealant in accordance with sealant manufacturer's written recommendations.
- 2.4.2 Primer: in accordance with sealant manufacturer's written recommendations.

3. EXECUTION

3.1 Examination

- 3.1.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for joint sealants installation in accordance with manufacturer's written instructions.
 - 3.1.1.1 Visually inspect substrate in presence of Consultant.
 - 3.1.1.2 Inform Consultant of unacceptable conditions immediately upon discovery.
 - 3.1.1.3 Proceed with installation only after unacceptable conditions have been remedied [and after receipt of written approval to proceed from Consultant.

3.2 Surface Preparation

- 3.2.1 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.
- 3.2.2 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter which may impair Work.
- 3.2.3 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.
- 3.2.4 Ensure joint surfaces are dry and frost free.
- 3.2.5 Prepare surfaces in accordance with manufacturer's directions.

3.3 Priming

- 3.3.1 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.

- 3.3.2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

3.4 Backup Material

- 3.4.1 Apply bond breaker tape where required to manufacturer's instructions.
- 3.4.2 Install joint filler to achieve correct joint depth and shape, with approximately 30% compression.

3.5 Mixing

- 3.5.1 Mix materials in strict accordance with sealant manufacturer's instructions.

3.6 Application

- 3.6.1 Sealant:
 - 3.6.1.1 Apply sealant in accordance with manufacturer's written instructions.
 - 3.6.1.2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.
 - 3.6.1.3 Apply sealant in continuous beads.
 - 3.6.1.4 Apply sealant using gun with proper size nozzle.
 - 3.6.1.5 Use sufficient pressure to fill voids and joints solid.
 - 3.6.1.6 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.
 - 3.6.1.7 Tool exposed surfaces before skinning begins to give slightly concave shape.
 - 3.6.1.8 Remove excess compound promptly as work progresses and upon completion.
- 3.6.2 Curing:
 - 3.6.2.1 Cure sealants in accordance with sealant manufacturer's instructions.
 - 3.6.2.2 Do not cover up sealants until proper curing has taken place.

3.7 Cleaning

- 3.7.1 Progress Cleaning: clean in accordance with Section [01 74 11- Cleaning] .
 - 3.7.1.1 Leave Work area clean at end of each day.
 - 3.7.1.2 Clean adjacent surfaces immediately.
 - 3.7.1.3 Remove excess and droppings, using recommended cleaners as work progresses.
 - 3.7.1.4 Remove masking tape after initial set of sealant.

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- 3.7.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section [01 74 11- Cleaning] .
- 3.7.3 Waste Management: separate waste materials for [reuse] [recycling] in accordance with Section [01 74 19- Waste Management and Disposal].
 - 3.7.3.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.8 Protection

- 3.8.1 Protect installed products and components from damage during construction.
- 3.8.2 Repair damage to adjacent materials caused by joint sealants installation.

END OF SECTION

1. GENERAL

1.1 Reference Standards

- 1.1.1 American Society for Testing and Materials International (ASTM)
 - 1.1.1.1 ASTM A653/A653M-[06a] , Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- 1.1.2 ASTM B29-[03] , Standard Specification for Refined Lead.
 - 1.1.2.1 ASTM B749-[03] , Standard Specification for Lead and Lead Alloy Strip, Sheet and Plate Products.
- 1.1.3 Canadian General Standards Board (CGSB)
 - 1.1.3.1 CAN/CGSB-1.181-[99] , Ready-Mixed Organic Zinc-Rich Coating.
 - 1.1.3.2 CGSB 41-GP-19Ma-[84] , Rigid Vinyl Extrusions for Windows and Doors.
- 1.1.4 CSA Group (CSA)
 - 1.1.4.1 CSA-G40.20-[04] /G40.21-[04] , General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
 - 1.1.4.2 CSA W59-[03] , Welded Steel Construction (Metal Arc Welding).
- 1.1.5 National Fire Protection Association (NFPA)
 - 1.1.5.1 NFPA 80-[99] , Standard for Fire Doors and Fire Windows.
 - 1.1.5.2 NFPA 252-[03] , Standard Methods of Fire Tests of Door Assemblies.
- 1.1.6 South Coast Air Quality Management District (SCAQMD), California State
 - 1.1.6.1 SCAQMD Rule 1113-[04] , Architectural Coatings.
 - 1.1.6.2 SCAQMD Rule 1168-[05] , Adhesives and Sealants Applications.
- 1.1.7 Underwriters' Laboratories of Canada (ULC)
 - 1.1.7.1 CAN/ULC-S701-[01] , Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering.
 - 1.1.7.2 CAN/ULC-S702-[97] , Standard for Thermal Insulation, Mineral Fibre, for Buildings.
 - 1.1.7.3 CAN/ULC-S704-[03] , Standard for Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced.
 - 1.1.7.4 CAN4-S104-[M80] , Standard Method for Fire Tests of Door Assemblies.

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- 1.1.7.5 CAN4-S105-[M85] , Standard Specification for Fire Door Frames Meeting the Performance Required by CAN4-S104.

1.2 System Description

1.2.1 Design Requirements:

- 1.2.1.1 Provide fire labelled frames for openings requiring fire protection ratings. Test products in conformance with [CAN4-S104] , [ASTM E152] [NFPA 252] and listed by nationally recognized agency having factory inspection services.

1.3 Action And Informational Submittals

- 1.3.1 Provide submittals in accordance with Section [01 33 00- Submittal Procedures] .
- 1.3.2 Provide product data: in accordance with Section [01 33 00- Submittal Procedures] .
- 1.3.3 Provide shop drawings: in accordance with Section [01 33 00- Submittal Procedures] .
 - 1.3.3.1 Submit drawings stamped and signed by professional engineer registered or licensed in Ontario, Canada.
 - 1.3.3.2 Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, [louvred] [glazed] , arrangement of hardware [fire rating] and finishes.
 - 1.3.3.3 Indicate each type frame material, core thickness, reinforcements, glazing stops, location of anchors and exposed fastenings [reinforcing] [fire rating] finishes.
 - 1.3.3.4 Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.
- 1.3.4 Provide samples in accordance with Section [01 33 00- Submittal Procedures] .
- 1.3.5 Submit one [300 x 300] mm corner sample of each type of frame.
 - 1.3.3.5 Show [snap-on trim with clips] [butt cutout] [glazing stops] [[300] mm long removable mullion connection] .

1.4 DELIVERY, STORAGE AND HANDLING

- 1.4.1 Deliver, store and handle materials in accordance with Section [01 61 00- Common Product Requirements] .
- 1.4.2 Waste Management and Disposal:

- 1.4.2.1 Separate waste materials for [recycling] [reuse] in accordance with Section [01 74 19- Waste Management and Disposal] .

2. **PRODUCTS**

2.1 **Materials**

- 2.1.1 Hot dipped galvanized steel sheet: to ASTM A653M, [ZF75] , minimum base steel thickness in accordance with CSDMA Table 1 - Thickness for Component Parts.
- 2.1.2 Reinforcement [channel] : to CSA G40.20/G40.21, Type 44W, coating designation to ASTM A653M, [ZF75] .
- 2.1.3 Cast or rolled pure sheet lead: to [ASTM B29] [ASTM B749] , weight: [9.8] [14.6] [19.5] kg/m², thickness [0.8] [1.2] [1.6] mm.
- 2.1.4 Composites: balance of core materials used in conjunction with lead: in accordance with manufacturers' proprietary design.

2.2 **Door Core Materials**

- 2.2.1 Honeycomb construction:
 - 2.2.1.1 Structural small cell, 24.5 mm maximum kraft paper 'honeycomb', weight: 36.3 kg per ream minimum, density: 16.5 kg/m
- 2.2.2 Stiffened: face sheets [welded] [laminated] , [honeycomb] [insulated] [uninsulated] core.
 - 2.2.2.1 Fibreglass: to CAN/ULC-S702, semi-rigid Type
 - 2.2.2.2 Expanded polystyrene: CAN/ULC-S701, Type as indicated on drawings.
 - 2.2.2.3 Polyurethane: to CAN/ULC-S704 rigid, modified poly/isocyanurate, closed cell board. Density 32 kg/m
 - 2.2.2.4 Temperature rise rated (TRR): core composition to limit temperature rise on unexposed side of door to 250 degrees C at [60] [30] minutes. Core to be tested as part of a complete door assembly, in accordance with [CAN4-S104] , [NFPA 252] [ASTM E152] , covering Standard Method of Tests of Door Assemblies and listed by nationally recognized testing agency having factory inspection service.

2.3 **Adhesives**

- 2.3.1 Honeycomb cores and steel components: heat resistant, spray grade, resin reinforced neoprene/rubber (polychloroprene) based, low viscosity, contact cement.
 - 2.3.1.1 Adhesive: maximum VOC content [50] g/L [to SCAQMD Rule 1168] .

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- 2.3.2 Polystyrene and polyurethane cores: heat resistant, epoxy resin based, low viscosity, contact cement.
- 2.3.3 Lock-seam doors: fire resistant, resin reinforced polychloroprene, high viscosity, sealant/adhesive.

2.4 Primer

- 2.4.1 Touch-up prime CAN/CGSB-1.181.
 - 2.4.1.1 Maximum VOC limit [50] g/L [to GC-03] .

2.5 Paint

- 2.5.1 Field paint steel doors and frames in accordance with Section[s] [09 91 23- Interior Painting] , [09 91 13- Exterior Painting] . Protect weatherstrips from paint. Provide final finish free of scratches or other blemishes.
 - 2.5.1.1 Maximum VOC emission level [50] g/L [to GS-11] [to SCAQMD Rule 1113] .

2.6 Accessories

- 2.6.1 Door silencers: single stud rubber/neoprene type.
- 2.6.2 [top] [interior] [Exterior] [bottom] caps: [steel] [rigid polyvinylchloride extrusion conforming to CGSB 41-GP-19Ma] .
- 2.6.3 Fabricate glazing stops as formed channel, minimum 16 mm height, accurately fitted, butted at corners and fastened to frame sections with counter-sunk oval head sheet metal screws.
- 2.6.4 Door bottom seal: as indicated on drawings.
- 2.6.5 Metallic paste filler: to manufacturer's standard.
- 2.6.6 Fire labels: [metal riveted] .
- 2.6.7 Sealant: as indicated on drawings.
- 2.6.8 Maximum VOC limit [250] g/L [to SCAQMD Rule 1168].
- 2.6.9 Glazing: as indicated on drawings.
- 2.6.10 Make provisions for [glazing] as indicated and provide necessary glazing stops.
 - 2.6.10.1 Provide removable stainless steel glazing beads for [dry glazing of snap-on type] [use with glazing tapes and compounds and secured with countersunk stainless steel screws] .
 - 2.6.10.2 Design exterior glazing stops to be tamperproof.

2.7 Frames Fabrication General

- 2.7.1 Fabricate frames in accordance with CSDMA specifications.

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- 2.7.2 Fabricate frames to profiles and maximum face sizes as indicated.
- 2.7.3 Exterior frames: [1.6] [1.2] mm welded thermally broken type construction.
- 2.7.4 Interior frames: [1.2] [1.6] mm welded type construction.
- 2.7.5 Blank, reinforce, drill and tap frames for mortised, templated hardware, [electronic hardware] using templates provided by finish hardware supplier. Reinforce frames for surface mounted hardware.
- 2.7.6 Manufacturer's nameplates on frames and screens are not permitted.
- 2.7.7 Conceal fastenings except where exposed fastenings are indicated.
- 2.7.8 Provide factory-applied touch up primer at areas where zinc coating has been removed during fabrication.
- 2.7.9 Insulate exterior frame components with polyurethane insulation.

2.8 Frame Anchorage

- 2.8.1 Provide appropriate anchorage to floor and wall construction.
- 2.8.2 Locate each wall anchor immediately above or below each hinge reinforcement on hinge jamb and directly opposite on strike jamb.
- 2.8.3 Provide 2 anchors for rebate opening heights up to 1520 mm and 1 additional anchor for each additional 760 mm of height or fraction thereof.
- 2.8.4 Locate anchors for frames in existing openings not more than 150 mm from top and bottom of each jambs and intermediate at 660 mm on centre maximum.

2.9 Frames: Welded Type

- 2.9.1 Welding in accordance with CSA W59.
- 2.9.2 Accurately mitre or mechanically joint frame product and securely weld on inside of profile.
- 2.9.3 Cope accurately and securely weld butt joints of mullions, transom bars, centre rails and sills.
- 2.9.4 Grind welded joints and corners to a flat plane, fill with metallic paste and sand to uniform smooth finish.
- 2.9.5 Securely attach floor anchors to inside of each jamb profile.
- 2.9.6 Weld in 2 temporary jamb spreaders per frame to maintain proper alignment during shipment.
- 2.9.7 Fabricate frame products for openings
- 2.9.8 Securely attach lead to inside of frame profile from return to jamb soffit (inclusive) on door side of frame only.

2.10 Frames: Knocked-Down Type

- 2.10.1 Ship knocked-down type frames unassembled.
- 2.10.2 Provide frames with mechanical joints which inter-lock securely and provide functionally satisfactory performance when assembled and installed in accordance with CSDMA Recommended Installation Guide for Steel Doors and Frames.
- 2.10.3 Securely attach floor anchors to inside of each jamb profile.

2.11 Frames: Slip-On Type

- 2.11.1 Ship slip-on type frames unassembled.
- 2.11.2 Provide frames with mechanical joints which inter-lock securely and provide functionally satisfactory performance when installed in accordance with CSDMA Recommended Installation Guide for Steel Doors and Frames and manufacturers' instructions.
- 2.11.3 Provide slip-on frames with manufacturers' proprietary design of wall anchorage comprising single, adjustable tension type per jamb and provision for secure attachment of each jamb base to stud runners.

2.12 Door Fabrication General

- 2.12.1 Doors: swing type, flush, with provision for glass and/or louvre openings as indicated.
- 2.12.2 Exterior doors: [hollow steel] [honeycomb] construction. Interior doors: [honeycomb] [hollow steel] construction.
- 2.12.3 Fabricate doors with longitudinal edges [locked seamed, adhesive assisted] [welded] [locked seam] . Seams: [visible] [grind welded joints to a flat plane, fill with metallic paste filler and sand to a uniform smooth finish] .
- 2.12.4 Doors: manufacturers' proprietary construction, tested and/or engineered as part of a fully operable assembly, including door, frame, gasketing and hardware in accordance with ASTM E330 to provide blast resistance.
- 2.12.5 Blank, reinforce, drill doors and tap for mortised, templated hardware [electronic hardware] .
- 2.12.6 Factory prepare holes 12.7 mm diameter and larger except mounting and through-bolt holes, on site, at time of hardware installation.
- 2.12.7 Reinforce doors where required, for surface mounted hardware. Provide flush [steel] [PVC] top caps to exterior doors. Provide inverted, recessed, spot welded channels to top and bottom of interior doors.
- 2.12.8 Provide factory-applied touch-up primer at areas where zinc coating has been removed during fabrication.

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2.12.9 Provide fire labelled doors for those openings requiring fire protection ratings, as scheduled. Test such products in conformance with [CAN4-S104] [ASTM E152] [NFPA 252] and list by nationally recognized agency having factory inspection service and construct as detailed in Follow-Up Service Procedures/Factory Inspection Manuals issued by listing agency to individual manufacturers.

2.12.10 Manufacturer's nameplates on doors are not permitted.

2.13 Doors: Honeycomb Core Construction

2.13.1 Form face sheets for exterior doors from [1.2] [1.6] [1.0] mm sheet steel with [polyurethane] [polystyrene] [honeycomb] core laminated under pressure to face sheets.

2.13.2 Form face sheets for interior doors from [1.2] [1.0] [1.6] mm sheet steel with [honeycomb] [temperature rise rated] core laminated under pressure to face sheets.

2.14 Hollow Steel Construction

2.14.1 Form face sheets for exterior doors from [1.2] [1.6] mm sheet steel.

2.14.2 Form face sheets for interior doors from [1.6] [1.2] sheet steel.

2.14.3 Reinforce doors with vertical stiffeners, securely [laminated] [welded] to face sheets at 150 mm on centre maximum.

2.14.4 Fill voids between stiffeners of exterior doors with [polyurethane] [fibreglass] [polystyrene] [honeycomb] core.

2.14.5 Fill voids between stiffeners of interior doors with [fibreglass] [temperature rise rated] [honeycomb] core.

2.15 Thermally Broken Doors And Frames

2.15.1 Fabricate thermally broken doors by using insulated core and separating exterior parts from interior parts with continuous interlocking thermal break.

2.15.2 Thermal break: rigid polyvinylchloride extrusion conforming to CGSB 41-GP-19Ma.

2.15.3 Fabricate thermally broken frames separating exterior parts from interior parts with continuous interlocking thermal break.

2.15.4 Apply insulation.

3. EXECUTION

3.1 Manufacturer's Instructions

3.1.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 Installation General

- 3.2.1 Install labelled steel fire rated doors and frames to NFPA 80 except where specified otherwise.
- 3.2.2 Install doors and frames to CSDMA Installation Guide.

3.3 Frame Installation

- 3.3.1 Set frames plumb, square, level and at correct elevation.
- 3.3.2 Secure anchorages and connections to adjacent construction.
- 3.3.3 Brace frames rigidly in position while building-in. Install temporary horizontal wood spreader at third points of door opening to maintain frame width. Provide vertical support at centre of head for openings over 1200 mm wide. Remove temporary spreaders after frames are built-in.
- 3.3.4 Make allowances for deflection of structure to ensure structural loads are not transmitted to frames.
- 3.3.5 Caulk perimeter of frames [between frame and adjacent material] .
- 3.3.6 Maintain continuity of [vapour retarder] [air barrier] .

3.4 Door Installation

- 3.4.1 Install doors and hardware in accordance with hardware templates and manufacturer's instructions and Section [08 71 00- Doors Hardware] .
- 3.4.2 Provide even margins between doors and jambs and doors and finished floor[and thresholds] as follows.
 - 3.4.2.1 Hinge side: 1.0 mm.
 - 3.4.2.2 Latchside and head: 1.5 mm.
 - 3.4.2.3 Finished floor, [and thresholds] [top of carpet] [non-combustible sill] : 13 mm.
- 3.4.3 Adjust operable parts for correct function.
- 3.4.4 Install louvres.

3.5 Finish Repairs

- 3.5.1 Touch up with primer finishes damaged during installation.
- 3.5.2 Fill exposed frame anchors [surfaces with imperfections] with metallic paste filler and sand to a uniform smooth finish.

3.6 Glazing

- 3.6.1 Install glazing for doors [frames] in accordance with Section
[08 80 50- Glazing] .

END OF SECTION

1. GENERAL

1.1 Reference Standards

- 1.1.1 Architectural Woodwork Manufacturers Association of Canada (AWMAC).
 - 1.1.1.1 Quality Standards for Architectural Woodwork [1998] .
- 1.1.2 Canadian General Standards Board (CGSB).
 - 1.1.2.1 CAN/CGSB-71.19-[M88] , Adhesive, Contact, Sprayable.
 - 1.1.2.2 CAN/CGSB-71.20-[M88] , Adhesive, Contact, Brushable.
- 1.1.3 Canadian Standards Association (CSA Group).
 - 1.1.3.1 CSA A440.2-[98] , Energy Performance of Windows and Other Fenestration Systems.
 - 1.1.3.2 CSA O115-[M1982(R2001)] , Hardwood and Decorative Plywood.
 - 1.1.3.3 CAN/CSA O132.2 Series-[90(R1998)] , Wood Flush Doors.
 - 1.1.3.4 CAN/CSA-O132.5-[M1992(R1998)] , Stile and Rail Wood Doors.
 - 1.1.3.5 CAN/CSA-Z808-[96] , A Sustainable Forest Management System: Guidance Document.
 - 1.1.3.6 CSA Certification Program for Windows and Doors [00] .
- 1.1.4 Environmental Choice Program (ECP).
 - 1.1.4.1 CCD-045-[92] , Sealants and Caulking Compounds.
 - 1.1.4.2 CCD-046-[92] , Adhesives.
- 1.1.5 National Fire Protection Association (NFPA).
 - 1.1.5.1 NFPA 80-[1999] , Standard for Fire Doors and Fire Windows.
 - 1.1.5.2 NFPA 252-[1999] , Standard Method of Fire Tests of Door Assemblies.
- 1.1.6 Underwriters' Laboratories of Canada (ULC).
 - 1.1.6.1 CAN-4S104M-[80(R1985)] , Fire Tests of Door Assemblies.
 - 1.1.6.2 CAN4-S105M-[85 (R1992)] , Fire Door Frames Meeting the Performance Required by CAN4-S104.

1.2 Action And Informational Submittals

- 1.2.1 Product Data:
 - 1.2.1.1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section [01 33 00- Submittal Procedures] .

- 1.2.1.2 Submit [two] copies of WHMIS MSDS - Material Safety Data Sheets in accordance with Section [01 33 00- Submittal Procedures] . Indicate VOC's:
 - 1.2.1.2.1 For caulking materials during application [and curing] .
 - 1.2.1.2.2 For door materials and adhesives.
- 1.2.2 Shop Drawings:
 - 1.2.2.1 Submit shop drawings in accordance with Section [01 33 00- Submittal Procedures] .
 - 1.2.2.2 Indicate door types and cutouts for [lights] [louvres] , sizes, core construction, transom panel construction and cutouts.

1.3 Samples

- 1.3.1 Submit samples in accordance with Section [01 33 00- Submittal Procedures].
- 1.3.2 Submit one [300 x 300] mm corner sample of each type wood door.
- 1.3.3 Show door construction, core, glazing detail and faces.
- 1.3.4 Manufacturer's Instructions:
 - 1.3.4.1 Submit manufacturer's installation instructions.

1.4 Quality Assurance

- 1.4.1 Regulatory Requirements:
 - 1.4.1.1 Wood fire rated doors: labelled and listed by an organization accredited by Standards Council of Canada.
- 1.4.2 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
- 1.4.3 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- 1.4.4 Pre-installation Meetings: conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.

1.5 Delivery, Storage, And Handling

- 1.5.1 Storage and Protection:
 - 1.5.1.1 Protect doors from dampness. Arrange for delivery after work causing abnormal humidity has been completed.
 - 1.5.1.2 Store doors in well ventilated room, off floor, in accordance with manufacturer's recommendations.
 - 1.5.1.3 Protect doors from scratches, handling marks and other damage.

1.5.1.4 Store doors away from direct sunlight.

1.6 Waste Management And Disposal

- 1.6.1 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- 1.6.2 Dispose of [polystyrene] [corrugated cardboard] [plastic] packaging material in appropriate on-site bin for recycling in accordance with site waste management program.
- 1.6.3 Unused or damaged glazing materials are not recyclable and must not be diverted to municipal recycling programs.
- 1.6.4 Divert unused adhesive material from landfill to official hazardous material collections site approved by Consultant.
- 1.6.5 Do not dispose of unused paint materials into sewer systems, into lakes, streams, onto ground or in locations where it will pose health or environmental hazard.

2. PRODUCTS

2.1 Fire Rated Wood Doors

- 2.1.1 2.2.1 Wood doors: tested in accordance with [NFPA 252] [CAN4-S104] to achieve rating as scheduled.

2.2 Wood Flush Doors

- 2.2.1 Solid core: to CAN/CSA-O132.2.1.
 - 2.2.1.1 Construction:
 - 2.2.1.1.1 Solid particleboard core: stile and rail frame bonded to particleboard core [with wood lock blocks] [and special [describe] wood blocking] , [7-ply] [5-ply] [3-ply] construction.
 - 2.2.1.1.2 Solid wood core:
 - (1) Glued block core [with wood edge band] .
 - (2) Framed block glued core.
 - (3) Framed block nonglued core.
 - (4) Stile and rail core.
 - (5) [7-ply] [5-ply] construction.
 - 2.2.1.1.3 Solid, wood block, lined core: with two core liners:
 - (1) Glued block [with wood edge band] .
 - (2) Framed block glued core.
 - (3) Framed block nonglued core.
 - (4) Stile and rail core.

(5) [7-ply] construction.

2.2.1.2 Face Panels:

2.2.1.2.1 Hardwood; veneer grades: [Grade I (Premium)] [Grade II (Good)] [Specialty Grade] [Sound Grade]

2.2.1.2.2 Hardboard: [composition face] [moulded face] .

2.2.1.2.3 Laminated plastic: with hardwood plywood subface.

2.2.1.3 Adhesive: [Type II (water resistant)] [Type I (waterproof)] for [exterior] [interior] doors.

2.2.2 Hollow core: to CAN/CSA-O132.2.2.

2.2.2.1 Construction: [mesh or cellular core] [ladder core] with lock blocks, [7-ply construction] .

2.2.2.2 Face Panels:

2.2.2.2.1 Hardwood: [Grade I (Premium)] [Grade II (Good)] [Sound Grade] [Specialty Grade]

2.2.2.2.2 Hardboard face panels: [moulded face] [composition face] .

2.2.2.2.3 Laminated plastic: with hardwood plywood subface.

2.2.2.3 Adhesive: [Type I (waterproof)] [Type II (water resistant)] for interior doors.

2.3 Stile And Rail Doors

2.3.1 Fabricate doors as indicated to [CAN/CSA-O132.5] [AWMAC] .

2.3.2 Construction:

2.3.2.1 Residential grade: to [AWMAC] [CAN/CSA-O132.5] , [interior] [solid] [exterior] [veneered] construction.

2.3.2.2 Architectural grade veneered doors: to AWMAC [dowelled] [mortise and tenon] joints, vertical edge AWMAC Detail No.[1] , stile and rail widths to [AWMAC] [Type II (interior)] [Type I (exterior)] adhesive.

2.3.3 Type: [louvred] [flat panel] [raised panel] [glazed] , [French] [plank] [combination] door.

2.4 Laminated Plastic

2.4.1 Plastic laminate: as indicated on drawings.

2.4.2 Backing: hardwood plywood subface to CSA O115.

2.4.3 Laminated plastic adhesive: as indicated on drawings.

2.5 Glazing

- 2.5.1 Glass: as indicated on drawings.
- 2.5.2 Accessories: as indicated on drawings.

2.6 Transom And Side Panels

- 2.6.1 Construction: to match existing door.
- 2.6.2 Meeting edges of doors and transom panels: [square] [checked] .
- 2.6.3 Veneer of doors and transom panels: [colour] [end] matched.

2.7 Wood Louvers

- 2.7.1 Material: to match face veneer.
- 2.7.2 Type: [round-edge slat] [as indicated] [flat-edge slat] [inverted-vee slat (sight proof)] .
- 2.7.3 Free area: [] .[as indicated]

2.8 Fabrication

- 2.8.1 Vertical edge strips [to match face veneer] .
- 2.8.2 Prepare doors for [louvres] [glazing] . Provide [glazing stops] [hardwood species as indicated on drawings] [to match face veneer] with mitred corners.
- 2.8.3 Bevel vertical edges of single acting doors [3 mm in 50 mm] on lock side and [1.5 mm in 50 mm] on hinge side.
- 2.8.4 Radius vertical edges of double acting doors to [60 mm] radius.
- 2.8.5 Finish laminated plastic smooth and flush with stile edges of door and bevel at approximately 20 degrees.
- 2.8.6 Provide waterproof [non-staining] membrane at cutouts on exterior doors to exclude moisture from core.

3. EXECUTION

3.1 Manufacturer's Instructions

- 3.1.1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.2 Installation

- 3.2.1 Unwrap and protect doors in accordance with CAN/CSA-O132.2 Series.
- 3.2.2 Install labelled fire rated doors to NFPA 80.
- 3.2.3 Install doors and hardware in accordance with manufacturer's printed instructions [and CAN/CSA-O132.2 Series, A] .

- 3.2.4 Adjust hardware for correct function.
- 3.2.5 Install glazing in accordance with Section [08 80 50- Glazing] .
- 3.2.6 Install [stops] [louvres]
- 3.2.7 Secure transom and side panels by means of [concealed fasteners or countersunk screws concealed by means of wood plugs matching panel in grain and colour] [stops] .

3.3 Adjustment

- 3.3.1 Re-adjust doors and hardware just prior to completion of building to function freely and properly.

3.4 Cleaning

- 3.4.1 Perform cleaning as soon as possible after installation to remove construction and accumulated environmental dirt.
- 3.4.2 Remove traces of primer, caulking; clean doors and frames.
- 3.4.3 Clean glass and glazing materials with approved non abrasive cleaner.
- 3.4.4 On completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

1. **GENERAL**

1.1 **Summary**

1.1.1 Related Sections: Coordinate with the following as applicable:

1.1.1.1 Section 08 71 00 - Door Hardware for door hardware not specified in this Section.

1.2 **Submittals**

1.2.1 Product Data: Submit manufacturer's literature including product characteristics and accessories.

1.2.2 Shop Drawings: Submit details of construction and mounting.

1.2.2.1 Provide templates for hardware preparation of doors and frames to be performed in factory.

1.2.3 Door Hardware Schedule: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule." Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

1.2.4 Verification Samples: Submit samples of materials selected for use to verify color and finish.

1.2.5 Closeout Submittals:

1.2.5.1 Operation and Maintenance Data.

1.2.5.2 Provide any specialized tools required for Owner's adjustments.

1.3 **Quality Assurance**

1.3.1 Manufacturer: Minimum of 5 years experience manufacturing similar products.

1.3.2 Installer: Minimum of 2 years experience installing similar products.

1.3.3 Field Measurements: To the greatest extent practical, take field measurements prior to fabrication.

1.4 **Delivery, Storage And Handling**

1.4.1 Deliver materials and products in unopened factory labeled packages. Store and handle in strict compliance with manufacturer's instructions and recommendations.

2. **PRODUCTS**

2.1 **Manufacturer**

2.1.1 Basis-of-Design, Canada Contact: K.N. CROWDER MFG. INC., 1220 Burloak Drive, Burlington, Ontario L7L 6B3. Telephone (905) 315-

9788. Toll Free 1-866-999-1KNC (1562). Fax (905) 315-8090. Toll Free Fax 1-800-567-0123.

2.2 Performance Requirements

- 2.2.1 Standards Compliance:
 - 2.2.1.1 ANSI/ BHMA A156.14 – Sliding and Folding Door Hardware.
 - 2.2.1.2 ANSI/ DHI A115.IG – Installation Guide for Doors and Hardware.
 - 2.2.1.3 American with Disabilities Act (ADA) 2010 Standards for Accessible Design.
 - 2.2.1.4 ANSI A117.1 Accessibility Guidelines for Building and Facilities.
 - 2.2.1.5 All state and local accessibility standards.
- 2.2.2 Operating hardware shall be fully exposed and usable from both sides at all times.
- 2.2.3 Doors shall comply with maximum opening force of 5 lbf applied parallel to door at latch.

2.3 CATCH'N'CLOSE Sliding Door Hardware

- 2.3.1 Catch'N'Close Hanger: CCB-810 Zero Clearance Catch'N'Close Hanger with Continuous Side Mount Bracket by K.N. Crowder Inc. with the following characteristics:
 - 2.3.1.1 Features: Zero clearance, side mount track system, Catch'N'Close system: prevents bouncing and slamming of doors, in-track adjustable stops, nylon wheels with precision ground ball bearings, bottom guide system
 - 2.3.1.2 Material: Extruded aluminum, 6063 Alloy
 - 2.3.1.3 Hanger: Zero clearance 1-3/8 inch (34.9 mm) x 1-1/8 inch (28.6 mm), recessed into door
 - 2.3.1.4 Track, CC-904: 1-3/4 inch (44.1 mm) x 2-11/16 inch (67.9 mm) extruded channel track
 - 2.3.1.5 Finish: Black Anodized
 - 2.3.1.6 Side Mount Bracket, CC-902: 2-3/8 inch (60.1 mm) x 3 inch (75.9 mm) extruded bracket
 - 2.3.1.7 Finish: Black Anodized
 - 2.3.1.8 End Cap, CC-921:
Finish: Black Anodized
 - 2.3.1.9 Snap-On Fascia, CC-920: 3 inch (76.2 mm) x 5-9/32 inch (133.9 mm) extruded fascia
 - 2.3.1.10 Finish: Black Anodized
 - 2.3.1.11 Load Capacity: up to 300 lbs. (136 kg)

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2.3.1.12 Guide Channel, C-914: 1 inch (25.4 mm) x 29/32 inch (22.9 mm), recessed into bottom of door. Finish Standard Mill

2.3.1.13 Guide: C-913 single roller floor guide

3. EXECUTION

3.1 Examination

3.1.1 Examine substrates for compliance with requirements for installation tolerances and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 Preparation

3.2.1 Steel Doors and Frames: Comply with ANSI/ BHMA A156-115.

3.2.2 Wood Doors: Comply with ANSI/ BHMA A156-115W.

3.3 Installation

3.3.1 Install products in strict accordance with manufacturer's instructions, approved submittals and in proper relationship with adjacent construction.

3.3.2 Mounting Heights: Mount door hardware units at heights indicated in the following applicable publications, unless specifically indicated or required to comply with governing regulations:

3.3.2.1 Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."

3.3.2.2 Custom Steel Doors and Frames: DHI's "Recommended Locations for Builders' Hardware for Custom Steel Doors and Frames."

3.3.2.3 Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."

3.3.3 Test for proper operation and adjust until satisfactory results are obtained. Replace units which do not operate properly.

3.4 Cleaning

3.4.1 Clean surfaces to remove soiling, stains, dust, and dirt using materials acceptable to manufacturer.

END OF SECTION

1. GENERAL

1.1 Reference Standards

1.1.1 ASTM International

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- 1.1.1.1 ASTM C542-[05] , Standard Specification for Lock-Strip Gaskets.
- 1.1.1.2 ASTM D790-[07e1] , Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
- 1.1.1.3 ASTM D1003-[07e1] , Standard Test Method for Haze and Luminous Transmittance of Plastics.
- 1.1.1.4 ASTM D1929-[96(R2001)e1] , Standard Test Method for Determining Ignition Temperature of Plastics.
- 1.1.1.5 ASTM D2240-[05] , Standard Test Method for Rubber Property - Durometer Hardness.
- 1.1.1.6 ASTM E84-[10] , Standard Test Method for Surface Burning Characteristics of Building Materials.
- 1.1.1.7 ASTM E330-[02] , Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.
- 1.1.1.8 ASTM F1233-[08] , Standard Test Method for Security Glazing Materials and Systems.
- 1.1.2 Canada Green Building Council (CaGBC)
- 1.1.3 Canadian General Standards Board (CGSB)
 - 1.1.3.1 CAN/CGSB-12.1-[M90] , Tempered or Laminated Safety Glass.
 - 1.1.3.2 CAN/CGSB-12.2-[M91] , Flat, Clear Sheet Glass.
 - 1.1.3.3 CAN/CGSB-12.3-[M91] , Flat, Clear Float Glass.
 - 1.1.3.4 CAN/CGSB-12.4-[M91] , Heat Absorbing Glass.
 - 1.1.3.5 CAN/CGSB-12.6-[M91] , Transparent (One-Way) Mirrors.
 - 1.1.3.6 CAN/CGSB-12.8-[97] , Insulating Glass Units.
 - 1.1.3.7 CAN/CGSB-12.8-[97] (Amendment), Insulating Glass Units.
 - 1.1.3.8 CAN/CGSB-12.10-[M76] , Glass, Light and Heat Reflecting.
 - 1.1.3.9 CAN/CGSB-12.12-[M90] , Plastic Safety Glazing Sheets.
- 1.1.4 Environmental Choice Program (ECP)
 - 1.1.4.1 CCD-045-[95(R2005)] , Sealants and Caulking Compounds.
- 1.1.5 Glass Association of North American (GANA)
 - 1.1.5.1 GANA Glazing Manual - [2008] .
 - 1.1.5.2 GANA Laminated Glazing Reference Manual - [2009] .
- 1.1.6 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards

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- 1.1.6.1 SCAQMD Rule 1168-[A2005] , Adhesives and Sealants Applications.

1.2 Administrative Requirements

- 1.2.1 Arrange for site visit with Consultant prior to start of Work to examine existing site conditions adjacent to demolition Work.
- 1.2.2 Hold project meetings every [week] [month] .
- 1.2.3 Ensure [subcontractor representatives] [site supervisor] [key personnel] [project manager] attend.
- 1.2.4 Consultant will submit [written] [verbal] notification of change to meeting schedule established upon contract award [24] hours prior to scheduled meeting.

1.3 Action And Informational Submittals

- 1.3.1 Submit in accordance with Section [01 33 00- Submittal Procedures] .
- 1.3.2 Product Data:
 - 1.3.2.1 Submit manufacturer's instructions, printed product literature and data sheets for [glass, sealants, and glazing accessories] and include product characteristics, performance criteria, physical size, finish and limitations.
- 1.3.3 Shop Drawings:
 - 1.3.3.1 Submit drawings stamped and signed by professional engineer registered or licensed in Ontario, Canada.
- 1.3.4 Samples:
 - 1.3.4.1 Submit for review and acceptance of each unit.
 - 1.3.4.2 Samples will be returned for inclusion into work.
 - 1.3.4.3 Submit [duplicate] mm size samples of [and sealant material] .
- 1.3.5 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- 1.3.6 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
 - 1.3.6.1 Recycled Content:
 - 1.3.6.1.1 Submit listing of recycled content products used, including details of required percentages or recycled content materials and products, showing their costs and percentages of [post-consumer] [post-industrial] content, and total cost of materials for project.

1.3.6.2 Low-Emitting Materials:

- 1.3.6.2.1 Submit listing of [adhesives and sealants] used in building, showing compliance with VOC and chemical component limits or restrictions requirements.

1.4 Closeout Submittals

- 1.4.1 Submit in accordance with Section [01 78 00- Closeout Submittals] .
- 1.4.2 Operation and Maintenance Data: submit operation and maintenance data for [glazing] for incorporation into manual.

1.5 Quality Assurance

- 1.5.1 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.6 Delivery, Storage And Handling

- 1.6.1 Deliver, store and handle materials in accordance with Section [with manufacturer's written instructions] [01 61 00- Common Product Requirements] .
- 1.6.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- 1.6.3 Storage and Handling Requirements:
- 1.6.3.1 Store materials [in dry location] [indoors] [off ground] and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
- 1.6.3.2 Store and protect [glazing and frames] from [nicks, scratches, and blemishes] .
- 1.6.3.3 Protect prefinished aluminum surfaces with [wrapping] [strippable coating] .
- 1.6.3.4 Replace defective or damaged materials with new.
- 1.6.4 Packaging Waste Management: remove for reuse [and return] [by manufacturer] of [crates,] [pallets,] [padding,] [packaging materials] as specified in [Waste Reduction Workplan] [Construction Waste Management Plan] in accordance with Section [01 74 19- Waste Management and Disposal] .

1.7 Ambient Conditions

- 1.7.1 Ambient Requirements:
- 1.7.1.1 Install glazing when ambient temperature is [10] degrees C minimum. Maintain ventilated environment for 24 hours after application.

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- 1.7.1.2 Maintain minimum ambient temperature before, during and [24] hours after installation of glazing compounds.

2. PRODUCTS

2.1 Materials

2.1.1 Design Criteria:

- 2.1.1.1 Ensure continuity of building enclosure vapour and air barrier using glass and glazing materials as follow:
- 2.1.1.1.1 Utilize inner light of multiple light sealed units for continuity of air and vapour seal.
- 2.1.1.2 Size glass to withstand wind loads, dead loads and positive and negative live loads [toASTM E330]
- 2.1.1.3 Limit glass deflection to [flexural limit of glass] [1/200] with full recovery of glazing materials.

2.1.2 Flat Glass:

- 2.1.2.1 Float glass: to CAN/CGSB-12.3, [mirror glazing (selected)] [glazing] [silvering] quality,
- 2.1.2.2 Sheet glass: to CAN/CGSB-12.2, [AA-special selected]
- 2.1.2.3 Safety glass: to CAN/CGSB-12.1, [translucent] [coloured] [transparent]
- 2.1.2.3.1 Type [1-laminated] [2-tempered] .
- 2.1.2.3.2 Class [B-float] .
- 2.1.2.3.3 Category [11] [1] .
- 2.1.2.3.4 [Edge treatment] .
- 2.1.2.4 Heat absorbing glass: to CAN/CGSB-12.4
- 2.1.2.4.1 Type [1-single glass] [2-insulating glass unit] .
- 2.1.2.4.2 Class [B-heat strengthened] [C-tempered] [D-laminated] [A-annealed] .
- 2.1.2.4.3 Style [3-low] [2-medium] [1-high] [1a-intermediate] [3a-very low] light transmittance.
- 2.1.2.4.4 Grade [AA-very low] [B-medium] [A-low] [C-high] shading co-efficient.
- 2.1.2.4.5 Tint [green] [blue/green] [grey] [bronze] [blue] [pink] .
- 2.1.2.5 Silvered mirror glass:
- 2.1.2.5.1 Type [1B-float glass for high humidity use] [3C- film reinforced] [1A-float glass for normal use] [2-sheet glass] [3A-tempered] [3B-laminated] .
- 2.1.2.6 One-way mirrored glass: to CAN/CGSB-12.6,

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- 2.1.2.6.1 Type [1-metallic coating applied to clear glass] [2-metallic coating applied to tinted glass] .
- 2.1.2.6.2 Class [C-tempered] [A-regular] [B-laminated] .
- 2.1.2.6.3 Form [2-sheet] [1-float] .
- 2.1.2.7 Spandrel glass: to CAN/CGSB-12.9,
 - 2.1.2.7.1 Type [2-heat strengthened] [1-tempered] .
 - 2.1.2.7.2 Class [A-float] [C-rolled glass with rough surface finish] [B-sheet] .
 - 2.1.2.7.3 Style [1-ceramic] [2-reflective] [3-organic] coated.
 - 2.1.2.7.4 Form [L-laminated] [M-monolithic] [I-insulating glass unit] .
- 2.1.2.8 Reflective glass: to CAN/CGSB-12.10,
 - 2.1.2.8.1 Type [2-sealed double glazing unit] [3-laminated] [1-monolithic] .
 - 2.1.2.8.2 Class [C-tempered] [B-heat strengthened] [A-annealed] .
 - 2.1.2.8.3 Style [1-high] [3-low] [2-medium] light transmittance.
 - 2.1.2.8.4 Grade [B-medium] [A-low] [C-high] shading co-efficient.
 - 2.1.2.8.5 Level [1-low] [2-high] thermal transmittance.
- 2.1.2.9 Wired glass: to CAN/CGSB-12.11,
 - 2.1.2.9.1 Type [2-figured (translucent)] [1-polished both sides (transparent)] .
 - 2.1.2.9.2 Wire mesh styles [2-hexagonal] [1-diamond] [3-square] [4-rectangular] .
- 2.1.2.10 Patterned glass: to CAN/CGSB-12.13,
 - 2.1.2.10.1 Type [3-wired] [2-tempered] [1-annealed] .
 - 2.1.2.10.2 Styles [B - figured on both surfaces] [A-figured one surface] .
 - 2.1.2.10.3 Surface treatment: [etching] [sandblasting] .
 - 2.1.2.10.4 Edge treatment:
- 2.1.2.11 Plastic glazing: to CAN/CGSB-12.12,
 - 2.1.2.11.1 Material: [polycarbonate,] [translucent] [clear] [acrylic,] .
 - 2.1.2.11.2 Category: [1] [2] .
 - 2.1.2.11.3 Coating:
 - 2.1.2.11.4 Light Transmission: minimum [80] %.
- 2.1.2.12 Polycarbonate security glazing:

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- 2.1.2.12.1 [Laminated, each lamination separated by [plastic film] polycarbonate sheet, [prismatic] [clear] , [bronze] [grey] colour.
 - 2.1.2.12.2 Ballistic performance: to ASTM F1233.
 - 2.1.2.12.3 Flexural strength: to ASTM D790.
 - 2.1.2.12.4 Light transmittance:
 - 2.1.2.12.5 Surface burning characteristics for flame and smoke spread: to ASTM E84.
 - 2.1.2.12.6 Self ignition characteristics: to ASTM D1929.
 - 2.1.2.13 Low emissivity (LOW E) glass,
 - 2.1.2.13.1 Metallic coating: [hard, pyrolitic] [soft, sputtered] .
 - 2.1.2.13.2 Light transmittance:
 - 2.1.2.13.3 Shading co-efficient:
 - 2.1.2.13.4 U-Value: winter
 - 2.1.2.14 Lead glass: transparent leaded for radiation protection.[minimum]
 - 2.1.2.14.1 Maximum lead equivalency: [2.01] [3.2] [2.7] mm.
 - 2.1.2.14.2 Weight: [611] [48] [34] kg/m2.
 - 2.1.2.14.3 X-Ray peak voltage: [200] [150] kV.
- 2.1.3 Insulating Glass Units:
 - 2.1.3.1 Insulating glass units: to CAN/CGSB-12.8, [double] [triple] unit,
 - 2.1.3.1.1 Glass: to [CAN/CGSB-12.4] [CAN/CGSB-12.1] [CAN/CGSB-12.2] [CAN/CGSB-12.3] [CAN/CGSB-12.10] .
 - 2.1.3.1.2 Glass thickness: as indicated on drawings
 - 2.1.3.1.3 Inter-cavity space thickness: as indicated on drawings
 - 2.1.3.1.4 Glass coating: surface number colour.[low "E"] [wet chemical deposition] [pyrolitic deposition] [MSVD] [reflective]
 - 2.1.3.1.5 Inert gas fill: [krypton] [argon] .
- 2.1.4 Plastic Film: in accordance with Section [08 87 53- Security Films] .
- 2.1.5 Sealant: in accordance with Section [07 92 00- Joint Sealants] .
 - 2.1.5.1 VOC limit [250] g/L maximum to [SCAQMD Rule 1168] .
 - 2.1.5.1.1 VOC limit: [5] % maximum by weight to [CCD-045] .

- 2.1.5.1.2 Ensure sealant does not contain chemical restrictions to CCD-045.

2.2 Accessories

- 2.2.1 Setting blocks: [neoprene] [silicone] [EPDM] , [80-90] Shore A durometer hardness to ASTM D2240, [to suit glazing method, glass light weight and area] [length of [25] mm for each square metre of glazing] [minimum 100 mm x width of glazing rabbet space minus [1.5] mm x height] .
- 2.2.2 Spacer shims: [neoprene] [silicone] , [50-60] Shore A durometer hardness to ASTM D2240, [75] mm long x one half height of glazing stop x thickness to suit application. Self adhesive on one face.
- 2.2.3 Glazing tape:
- 2.2.3.1 Preformed [butyl] compound [with integral resilient tube spacing device] , [10-15] Shore A durometer hardness to ASTM D2240; coiled on release paper;
- 2.2.3.2 Closed cell polyvinyl chloride foam, coiled on release paper over adhesive on two sides, maximum water absorption by volume [2] %, designed for compression of [25] %, to effect an air and vapour seal;
- 2.2.4 Glazing splines: resilient [silicone] [polyvinyl chloride] , extruded shape to suit glazing channel retaining slot,.[as selected]
- 2.2.5 Glazing clips: manufacturer's standard type.
- 2.2.6 Lock-strip gaskets: to ASTM C542.
- 2.2.7 Mirror attachment accessories:
- 2.2.7.1 Stainless steel clips.
- 2.2.7.2 Plastic rosettes.
- 2.2.7.3 Mirror adhesive, chemically compatible with mirror coating and wall substrate.
- 2.2.7.4 Mirror frames:

3. EXECUTION

3.1 Examination

- 3.1.1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for glazing installation in accordance with manufacturer's written instructions.
- 3.1.1.1 Verify that openings for glazing are correctly sized and within tolerance.
- 3.1.1.2 Verify that surfaces of glazing channels or recesses are clean, free of obstructions, and ready to receive glazing.
- 3.1.1.3 Visually inspect substrate in presence of Consultant .

- 3.1.1.4 Inform Consultant of unacceptable conditions immediately upon discovery.
- 3.1.1.5 Proceed with installation only after unacceptable conditions have been remedied [and after receipt of written approval to proceed from Consultant]

3.2 Preparation

- 3.2.1 Clean contact surfaces with solvent and wipe dry.
- 3.2.2 Seal porous glazing channels or recesses with substrate compatible primer or sealer.
- 3.2.3 Prime surfaces scheduled to receive sealant.

3.3 Installation: Exterior - Dry Method (Preformed Glazing)

- 3.3.1 Manufacturer's Instructions: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.
- 3.3.2 Perform work in accordance with [GANA Glazing Manual] [GANA Laminated Glazing Reference Manual] for [glazing installation methods] .
- 3.3.3 Cut glazing [tape] [spline] to length; install on glazing light. Seal corners by butting [tape] [spline] and sealing junctions with sealant.
- 3.3.4 Place setting blocks at [1/4] [1/3] points, with edge block maximum [150] mm from corners.
- 3.3.5 Rest glazing on setting blocks and push against fixed stop with sufficient pressure to attain full contact.
- 3.3.6 Install removable stops without displacing glazing [tape] [spline] . Exert pressure for full continuous contact.
- 3.3.7 Trim protruding tape edge.

3.4 Installation: Exterior Wet/Dry Method (Preformed Tape And Sealant)

- 3.4.1 Perform work in accordance with [GANA Glazing Manual] [GANA Laminated Glazing Reference Manual] for [glazing installation methods] .
- 3.4.2 Cut glazing tape to length and set against permanent stops, [6] mm below sight line. Seal corners by butting tape and dabbing with sealant.
- 3.4.3 Apply heel bead of sealant along intersection of permanent stop with frame ensuring full perimeter seal between glass and frame to complete continuity of air and vapour seal.
- 3.4.4 Place setting blocks at [1/3] [1/4] points, with edge block maximum [150] mm from corners.

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- 3.4.5 Rest glazing on setting blocks and push against tape [and heel head of sealant] with sufficient pressure to attain full contact at perimeter of light or glass unit.
- 3.4.6 [Install removable stops with spacer strips inserted between glazing and applied stops [6] mm below sight line] . [Place glazing tape on glazing light or unit with tape [flush with] [16] mm below] sight line.
- 3.4.7 Fill gap between glazing and stop with sealant to depth equal to bite of frame on glazing, maximum [9] mm below sight line.
- 3.4.8 Apply cap head of sealant along void between stop and glazing, to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

3.5 Installation: Exterior - Wet Method (Sealant And Sealant)

- 3.5.1 Perform work in accordance with [GANA Glazing Manual] [GANA Laminated Glazing Reference Manual] for [glazing installation methods] .
- 3.5.2 Place setting blocks at [1/3] [1/4] points and install glazing light or unit.
- 3.5.3 Install removable stops with glazing centred in space by inserting spacer shims both sides at [600] mm intervals, [6] mm below sight line.
- 3.5.4 Fill gaps between glazing and stops with sealant to depth of bite on glazing, maximum [9] mm below sight line to ensure full contact with glazing and continue air and vapour seal.
- 3.5.5 Apply sealant to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

3.6 Installation: Interior - Dry Method (Tape And Tape)

- 3.6.1 Perform work in accordance with [GANA Glazing Manual] [GANA Laminated Glazing Reference Manual] for [glazing installation methods] .
- 3.6.2 Cut glazing tape to length and set against permanent stops, projecting 1.6 mm above sight line.
- 3.6.3 Place setting blocks at [1/3] [1/4] points, with edge block maximum [150] mm from corners.
- 3.6.4 Rest glazing on setting blocks and push against tape for full contact at perimeter of light or unit.
- 3.6.5 Place glazing tape on free perimeter of glazing in same manner described.
- 3.6.6 Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.
- 3.6.7 Knife trim protruding tape.

3.7 Installation: Interior Wet/Dry Method (Tape And Sealant)

- 3.7.1 Perform work in accordance with [GANA Glazing Manual] [GANA Laminated Glazing Reference Manual] for [glazing installation methods] .
- 3.7.2 Cut glazing tape to length and install against permanent stops, projecting 1.6 mm above sight line.
- 3.7.3 Place setting blocks at [1/4] [1/3] points, with edge block maximum [150] mm from corners.
- 3.7.4 Rest glazing on setting blocks and push against tape to ensure full contact at perimeter of light or unit.
- 3.7.5 Install removable stops, with spacer shims inserted between glazing and applied stops at [600] mm intervals, [6] mm below sight line.
- 3.7.6 Fill gaps between light and applied stop with sealant to depth equal to bite on glazing, to uniform and level line.
- 3.7.7 Trim protruding tape edge.

3.8 Installation: Interior - Wet Method Compound And Compound

- 3.8.1 Perform work in accordance with [GANA Glazing Manual] [GANA Laminated Glazing Reference Manual] for [glazing installation methods] .
- 3.8.2 Install glazing resting on setting blocks. Install applied stop and centre light by use of spacer shims at [600] mm centres, [6] mm below sight line.
- 3.8.3 Locate and secure glazing light using [spring wire clips] [glazers' clips].
- 3.8.4 Fill gaps between glazing and stops with glazing compound until flush with sight line. Tool surface to straight line.

3.9 Installation: Mirrors

- 3.9.1 Set mirrors with adhesive, applied in accordance with adhesive manufacturer's instructions.
- 3.9.2 Set mirrors with [rosettes] [clips] . Anchor rigidly to wall construction.
- 3.9.3 Set in frame.
- 3.9.4 Place plumb and level.

3.10 Installation: Plastic Film

- 3.10.1 Install plastic film with adhesive, applied in accordance with film manufacturer's instructions.
- 3.10.2 Place without air bubbles, creases or visible distortion.
- 3.10.3 Fit tight to glass perimeter with razor cut edge.

3.11 Cleaning

- 3.11.1 Progress Cleaning: clean in accordance with Section [01 74 11- Cleaning] .
 - 3.11.1.1 Leave Work area clean at end of each day.
 - 3.11.1.1.1 Remove traces of primer, caulking.
 - 3.11.1.1.2 Remove glazing materials from finish surfaces.
 - 3.11.1.1.3 Remove labels.
 - 3.11.1.1.4 Clean glass [and mirrors] using approved non-abrasive cleaner in accordance with manufacturer's instructions.
 - 3.11.1.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section [01 74 11- Cleaning] .
- 3.11.2 Waste Management: separate waste materials for [reuse] [recycling] in accordance with Section [01 74 19- Waste Management and Disposal] .
 - 3.11.2.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.12 Protection

- 3.12.1 Protect installed products and components from damage during construction.
- 3.12.2 After installation, mark each light with an "X" by using removable plastic tape or paste.
 - 3.12.2.1 Do not mark heat absorbing or reflective glass units.
- 3.12.3 Repair damage to adjacent materials caused by glazing installation.

END OF SECTION

1. **GENERAL**

1.1 **Reference Standards**

- 1.1.1 ASTM International (ASTM)
 - 1.1.1.1 ASTM C1396/C1396M-[09a] , Standard Specification for Gypsum Wallboard.
 - 1.1.1.2 ASTM C475/C475M-[02(2007)] , Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
 - 1.1.1.3 ASTM C514-[04(2009)e1] , Standard Specification for Nails for the Application of Gypsum Board.
 - 1.1.1.4 ASTM C645-[09a] , Standard Specification for Nonstructural Steel Framing Members.
 - 1.1.1.5 ASTM C754-[09a] , Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
 - 1.1.1.6 ASTM C840-[08] , Standard Specification for Application and Finishing of Gypsum Board.
 - 1.1.1.7 ASTM C954-[10] , Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.122 in. (2.84 mm) in Thickness.
 - 1.1.1.8 ASTM C1002-[07] , Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
 - 1.1.1.9 ASTM C1047-[10] , Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
 - 1.1.1.10 ASTM C1178/C1178M-[08] , Standard Specification for Glass Mat Water-Resistant Gypsum Backing Board.
- 1.1.2 Canada Green Building Council (CaGBC)
- 1.1.3 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
 - 1.1.3.1 SCAQMD Rule 1168- [A2005] , Adhesives and Sealants Applications.
- 1.1.4 Underwriters' Laboratories of Canada (ULC)
 - 1.1.4.1 CAN/ULC-S102- [07] , Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

1.2 **Action And Informational Submittals**

- 1.2.1 Submit in accordance with Section [01 33 00- Submittal Procedures] .

1.2.2 Product Data:

- 1.2.2.1 Submit manufacturer's instructions, printed product literature and data sheets for [gypsum, framing, sealants] and include product characteristics, performance criteria, physical size, finish and limitations.

1.2.3 Samples:

- 1.2.3.1 Submit for review and acceptance of each unit.
- 1.2.3.2 Samples will be returned for inclusion into work.
- 1.2.3.3 Submit [300] [duplicate] x [300] mm size samples of [vinyl faced gypsum board] and [300] mm long samples of [insulating strip] [textured finishes] [cornice cap] [corner and casing beads] [shadow mould] [vinyl mouldings] .

1.2.4 Test and Evaluation Reports: submit test reports in accordance with Section [01 45 00- Quality Control] , from approved independent testing laboratory, certifying partition system complies with [sound transmission rating] , [fire-resistance rating] as specified.

1.3 Delivery, Storage And Handling

- 1.3.1 Deliver, store and handle materials in accordance with Section [01 61 00- Common Product Requirements] [with manufacturer's written instructions] .

1.3.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

1.3.3 Storage and Handling Requirements:

- 1.3.3.1 Store materials [in dry location] [indoors] [off ground] and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
- 1.3.3.2 Store materials inside, level, under cover. Protect from weather, damage from construction operations and other causes, in accordance with manufacturer's printed instructions.
- 1.3.3.3 Handle materials to prevent damage to edges or surfaces. Protect metal accessories and trim from being bent or damaged.
- 1.3.3.4 Store and protect [partition materials] from [nicks, scratches, and blemishes] .
- 1.3.3.5 Replace defective or damaged materials with new.

1.3.4 Packaging Waste Management: remove for reuse [by manufacturer] [and return] of [padding,] [packaging materials] [pallets,] [crates,] as specified in [Waste Reduction Workplan] [Construction Waste

Management Plan] in accordance with Section [01 74 19- Waste Management and Disposal] .

2. PRODUCTS

2.1 Materials

2.1.1 Performance / Design Criteria:

- 2.1.1.1 Partition assembly to be [fire resistance rated] [non-combustible construction] .
- 2.1.1.2 Minimum sound transmission class rating of installed panel partition to be STC [30] , tested to [ASTM E90] .

2.1.2 Non-structural Metal Framing:

- 2.1.2.1 Non-load bearing channel stud framing: to [ASTM C645] , [] mm thickness hot dipped galvanized steel sheet, for screw attachment of gypsum board. Knock-out service holes at 460 mm centres.[0.53]
- 2.1.2.2 Floor and ceiling tracks: to [ASTM C645] , in widths to suit stud sizes, [32] mm flange height.
- 2.1.2.3 Metal channel stiffener: [19] x [1.4] mm thick cold rolled steel, coated with rust inhibitive coating.

2.1.3 Gypsum Board:

- 2.1.3.1 Standard board: to [ASTM C1396/C1396M] [Type X] [regular] , 1200 mm wide x maximum practical length, ends square cut, edges tapered.
- 2.1.3.2 Vinyl-faced board: to [ASTM C1396/C1396M] , [Class I] [Class II] , [regular] [Type X] , [1200] mm wide x maximum practical length, covered with minimum [0.15] mm thick wall covering having maximum flame spread: 25, fuel contributed: 35, smoke developed: 50 when tested to [CAN/ULC-S102] , [] []
- 2.1.3.3 Glass mat water-resistant gypsum backing board: to [ASTM C1178/C1178M] , []
- 2.1.3.4 Metal furring runners, hangers, tie wires, inserts, anchors: to []
- 2.1.3.5 Drywall furring channels: [0.5] mm core thickness galvanized steel channels for screw attachment of gypsum board.
- 2.1.3.6 Steel [drill] [tapping] screws: to [ASTM C514] [ASTM C1002] [ASTM C954] .
- 2.1.3.7 Casing beads, corner beads, control joints and edge trim: to [ASTM C1047] , [Zinc] [PVC] [ABS] [metal, [aluminum coated] [zinc-coated by hot-dip process] [zinc-coated by electrolytic process] [phosphatized]] , [0.5] mm base

thickness, perforated flanges, one piece length per location.

2.2 Accessories

- 2.2.1 Acoustical [insulation] : type recommended by manufacturer to achieve STC rating specified.
- 2.2.2 Sealants: in accordance with Section [07 92 00- Joint Sealants] [to ASTM C475] .
 - 2.2.2.1 VOC limit [250] g/L maximum to [SCAQMD Rule 1168] .
- 2.2.3 Insulating strip: rubberized, moisture resistant, [3] mm thick [closed cell neoprene] strip, [12] mm wide, with self sticking permanent adhesive on one face, lengths as required.

3. EXECUTION

3.1 Examination

- 3.1.1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for product installation in accordance with manufacturer's written instructions prior to partition installation.
 - 3.1.1.1 Visually inspect substrate in presence of Consultant.
 - 3.1.1.2 Inform Consultant. of unacceptable conditions immediately upon discovery.
 - 3.1.1.3 Proceed with installation only after unacceptable conditions have been remedied [and after receipt of written approval to proceed from Consultant..

3.2 Erection Of Framing

- 3.2.1 Install steel framing members to receive screw-attached gypsum board in accordance with [ASTM C754] except where specified otherwise.
- 3.2.2 Align partition tracks at floor and ceiling and secure at [610] mm on centre maximum.
- 3.2.3 Place studs vertically at [400] mm on centre and maximum of [50] mm from abutting walls, and at each side of openings and corners. Position studs in tracks at floor and ceiling. Cross brace steel studs as required to provide rigid installation to manufacturer's instructions.
- 3.2.4 Erect metal studding to tolerance of 1:1000.
- 3.2.5 Co-ordinate simultaneous erection of studs with installation of service lines. When erecting studs ensure web openings are aligned.
- 3.2.6 Include two studs extending from floor to ceiling at each side of openings wider than stud centres specified. Secure studs together,

[50] mm apart using column clips or other approved means of fastening placed alongside frame anchor clips.

- 3.2.7 Install heavy gauge single jamb studs at openings.
- 3.2.8 Erect track at head of door/window openings and sills of sidelight/window openings to accommodate intermediate studs. Secure track to studs at each end, in accordance with manufacturer's instructions. Install intermediate studs above and below openings in same manner and spacing as wall studs.
- 3.2.9 Install steel studs or furring channel between studs for attaching electrical and other boxes.
- 3.2.10 Extend partitions to u/s of slabs.
- 3.2.11 Maintain clearance under beams and structural slabs to avoid transmission of structural loads to studs. Use double track slip joint.
- 3.2.12 Install continuous insulating strips to isolate studs from uninsulated surfaces.
- 3.2.13 Install [insulating strip] under studs and tracks around perimeter of sound control partitions.

3.3 Erection Of Gypsum Board And Accessories

- 3.3.1 Do application and finishing of gypsum board in accordance with [ASTM C840] except where specified otherwise.
- 3.3.2 Erect hangers and runner channels for suspended gypsum board ceilings in accordance with [ASTM C840] except where specified otherwise.
- 3.3.3 Support light fixtures by providing additional ceiling suspension hangers within 150 mm of each corner and at maximum 610 mm around perimeter of fixture.
- 3.3.4 Frame with furring channels, perimeter of openings for access panels, light fixtures, diffusers, grilles
- 3.3.5 Install [19 x 64] mm furring channels parallel to, and at exact locations of steel stud partition header track.
- 3.3.6 Furr for gypsum board faced vertical bulkheads within and at termination of ceilings.
- 3.3.7 Furr above suspended ceilings for gypsum board fire and sound stops and to form plenum areas as indicated.
- 3.3.8 Install wall furring for gypsum board wall finishes in accordance with [ASTM C840] , except where specified otherwise.
- 3.3.9 Install acoustical [insulation] [sealant] in sound rated partitions to correspond with tested assembly.

- 3.3.10 Install gypsum boards in direction that will minimize number of end-butt joints. Stagger end joints 250 mm minimum.

3.4 Application

- 3.4.1 Apply gypsum board after bucks, anchors, blocking, sound attenuation, electrical and mechanical work are approved.
- 3.4.2 Apply [single] layer gypsum board to metal furring or framing using screw fasteners. Maximum spacing of screws 300 mm on centre.
- 3.4.3 Arrange vinyl-faced gypsum board symmetrical about openings and wall areas, with [aluminum/vinyl mouldings between joints] [butt joints]

3.5 Installation

- 3.5.1 Erect accessories straight, plumb or level, rigid and at proper plane. Use full length pieces where practical. Make joints tight, accurately aligned and rigidly secured. Mitre and fit corners accurately, free from rough edges. Secure [using contact adhesive for full length] [at [150] mm on centre] .
- 3.5.2 Install casing beads around perimeter of suspended ceilings.
- 3.5.3 Install casing beads where gypsum board butts against surfaces having no trim concealing junction and where indicated. [Seal joints with sealant] .
- 3.5.4 Install insulating strips continuously at edges of gypsum board and casing beads abutting metal window and exterior door frames, to provide thermal break.
- 3.5.5 Install access doors to electrical and mechanical fixtures specified in respective sections.
 - 3.5.5.1 Rigidly secure frames to furring or framing systems.
- 3.5.6 Finish face panel joints and internal angles with joint system consisting of joint compound, joint tape and taping compound installed according to manufacturer's directions and feathered out onto panel faces.
- 3.5.7 Finish corner beads, control joints and trim as required with two coats of joint compound and one coat of taping compound, feathered out onto panel faces.
- 3.5.8 Fill screw head depressions with joint and taping compounds to bring flush with adjacent surface of gypsum board so as to be invisible after surface finish is completed.
- 3.5.9 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for surface finish.

3.6 Cleaning

3.6.1 Progress Cleaning: clean in accordance with Section [01 74 00- Cleaning] .

3.6.1.1 Leave Work area clean at end of each day.

3.6.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section [01 74 00- Cleaning] .

3.6.3 Waste Management: separate waste materials for [reuse] [recycling] in accordance with Section [01 74 19- Waste Management and Disposal]

3.6.3.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.7 Protection

3.7.1 Protect installed products and components from damage during construction.

3.7.2 Repair damage to adjacent materials caused by partition installation.

3.8 Schedules

3.8.1 Construct fire rated assemblies where indicated.

END OF SECTION

1. GENERAL

1.1 Reference Standards

- 1.1.1 ASTM International
 - 1.1.1.1 ASTM C645-[14e1] , Standard Specification for Nonstructural Steel Framing Members.
 - 1.1.1.2 ASTM A653/A653M-[07] , Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvanized) by the Hot-Dip Process.
 - 1.1.1.3 ASTM C754-[15] , Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
- 1.1.2 Canada Green Building Council (CaGBC)
- 1.1.3 Underwriter's Laboratories (UL) Environmental Standards
 - 1.1.3.1 UL-2768-[2011] , Architectural Surface Coatings.
 - 1.1.3.2 Surface Coatings - Recycled Water-Borne. UL-2760-[2011]
- 1.1.4 The Master Painters Institute (MPI)
 - 1.1.4.1 Architectural Painting Specification Manual - [current edition] .
 - 1.1.4.1.1 MPI #26, Primer, Galvanized Metal, Cementitious.
- 1.1.5 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
 - 1.1.5.1 SCAQMD Rule 1168-[A2005] , Adhesives and Sealants Applications.

1.2 Action And Informational Submittals

- 1.2.1 Submit in accordance with Section [01 33 00- Submittal Procedures] .
- 1.2.2 Product Data:
 - 1.2.2.1 Submit manufacturer's instructions, printed product literature and data sheets for [metal framing] and include product characteristics, performance criteria, physical size, finish and limitations.
 - 1.2.2.2 Submit [2] copies of WHMIS MSDS in accordance with Section [01 35 43- Environmental Procedures] [01 35 29.06- Health and Safety Requirements]
- 1.2.3 Samples:
 - 1.2.3.1 Submit [duplicate] 300 mm long samples of non-structural metal framing.

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Non-Structural Metal Framing

1.3 Quality Assurance

- 1.3.1 Test Reports: submit certified test reports showing compliance with specified performance characteristics and physical properties.
- 1.3.2 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.4 Delivery, Storage And Handling

- 1.4.1 Deliver, store and handle materials in accordance with Section [01 61 00- Common Product Requirements] [with manufacturer's written instructions] .
- 1.4.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- 1.4.3 Storage and Handling Requirements:
 - 1.4.3.1 Store materials [in dry location] [indoors] and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - 1.4.3.2 Store and protect [metal framing] from [nicks, scratches, and blemishes] .
 - 1.4.3.3 Replace defective or damaged materials with new.
- 1.4.4 Packaging Waste Management: remove for reuse [and return] [by manufacturer] of [packaging materials] [pallets,] [crates,] [padding,] as specified in [Construction Waste Management Plan] [Waste Reduction Workplan] in accordance with Section [01 74 19- Waste Management and Disposal].

2. PRODUCTS

2.1 Materials

- 2.1.1 Non-load bearing channel stud framing: to ASTM C645, [] mm thickness hot dipped zinc-coated (galvanized) steel sheet in accordance with ASTM A653, Z180, for screw attachment of gypsum [0.53] [0.91] .[lath] [board]
 - 2.1.1.1 Knock-out service holes at [460] mm centres.
- 2.1.2 Floor and ceiling tracks: to ASTM C645, in widths to suit stud sizes, and as follows:
 - 2.1.2.1 Slotted Deflection Track for Fire Separations: Premanufactured slotted top runner with 63 mm down standing legs and having 6 mm wide x 38 mm high slots spaced at 25 mm on centre along length of runner; tested and certified for use in fire rated wall construction.

- 2.1.2.2 Double Runner Deflection Track: Outside runner using [50 mm] [75 mm] flanges; inner runner 33 mm; maintaining 25 mm minimum deflection space.
- 2.1.2.3 Deep Leg Deflection Track: Top runner having [75 mm] [50 mm] down standing legs; maintaining 13 mm minimum deflection space.
- 2.1.2.4 Base Runner: Bottom track with 33 mm upstanding legs.
- 2.1.3 Non-load bearing truss stud framing system: to consist of:
 - 2.1.3.1 Studs; welded together at contact points.[double rod chords] [12 x 6 mm x 1.2 mm channel chords]
 - 2.1.3.1.1 Make rod of minimum [4.5] mm diameter cold drawn steel wire having tensile strength of [620] MPa.
 - 2.1.3.1.2 Design studs for clip attachment of gypsum lath or wire tying of metal lath.
 - 2.1.3.2 Floor track: snap-in type formed to hold studs securely in place at 50 mm intervals; fabricated from [0.5] mm thick steel sheet; size to suit studs.
 - 2.1.3.3 Ceiling track: channel shaped track for use with stud shoes and [1.2] mm diameter double wire ties; size to suit studs.
 - 2.1.3.4 After fabrication apply one shop coat of [MPI #26] primer to steel surfaces.
 - 2.1.3.4.1 Descale and clean surfaces before painting.
- 2.1.4 Furring Channels: Commercial steel sheet in accordance with ASTM A653, Z180, hot dipped zinc-coated (galvanized), as follows:
 - 2.1.4.1 Hat Shaped, Rigid Furring Channels: ASTM C645, 0.75 mm thickness x 22 mm deep.
 - 2.1.4.2 Resilient Furring Channels: 0.46 mm thickness x 13 mm deep members designed to reduce sound transmission having asymmetrical face attached to single flange by a slotted leg (web).
- 2.1.5 Curving Tracks: Commercial steel sheet with ASTM A653, Z180, hot dipped zinc-coated (galvanized), complete with flexible sliding straps to allow for curvature indicated on drawings; width to suit framing, and as follows:
 - 2.1.5.1 Width: [92 mm] [65 mm] .
 - 2.1.5.2 Minimum base metal thickness: 0.75 mm.
- 2.1.6 Metal channel stiffener: mm thick cold rolled steel, coated with rust inhibitive coating.
- 2.1.7 Acoustical sealant: in accordance with Section [07 92 00- Joint Sealants] .

- 2.1.8 Sealants: VOC limit [250] [30] [70] g/L maximum to [SCAQMD Rule 1168] [GS-36] .
- 2.1.9 Insulating strip: rubberized, moisture resistant 3 mm thick [cork] [foam] strip, 12 mm wide, with self sticking adhesive on one face, lengths as required.

3. **EXECUTION**

3.1 **Examination**

- 3.1.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for non-structural metal framing application in accordance with manufacturer's written instructions.
 - 3.1.1.1 Visually inspect substrate in presence of Consultant.
 - 3.1.1.2 Inform Consultant of unacceptable conditions immediately upon discovery.
 - 3.1.1.3 Proceed with installation after unacceptable conditions have been remedied [and after receipt of written approval to proceed from Consultant.

3.2 **Erection**

- 3.2.1 Erect partitions in accordance with framing requirements of ASTM C754.
- 3.2.2 Align partition tracks at floor and ceiling and secure at [600] mm on centre maximum.
- 3.2.3 Install damp proof course under stud shoe tracks of partitions on slabs on grade.
- 3.2.4 Place studs vertically from abutting walls, and at each side of openings and corners.[50]
 - 3.2.4.1 Position studs in tracks at floor and ceiling. Cross brace steel studs as required to provide rigid installation to manufacturer's instructions.
- 3.2.5 Erect metal studding to tolerance of 1:1000.
- 3.2.6 Attach studs to [ceiling] [bottom] track using [screws] [pop rivets] [crimp method] .
- 3.2.7 Co-ordinate simultaneous erection of studs with installation of service lines. Align web openings when erecting studs.
- 3.2.8 Co-ordinate erection of studs with installation of door/window frames and special supports or anchorage for work specified in other Sections.

- 3.2.9 Provide two studs extending from floor to ceiling at each side of openings wider than stud centres specified.
 - 3.2.9.1 Secure studs together, [50] mm apart using column clips or other approved means of fastening placed alongside frame anchor clips.
- 3.2.10 Install heavy gauge single jamb studs at openings.
- 3.2.11 Erect track at head of door/window openings and sills of sidelight/window openings to accommodate intermediate studs.
 - 3.2.11.1 Secure track to studs at each end, in accordance with manufacturer's instructions.
 - 3.2.11.2 Install intermediate studs above and below openings in same manner and spacing as wall studs.
- 3.2.12 Frame openings and around built-in equipment, cabinets, access panels, on four sides. Extend framing into reveals. Check clearances with equipment suppliers.
- 3.2.13 Install steel studs or furring channel between studs for attaching electrical and other boxes.
- 3.2.14 Extend partitions to u/s of slab except where noted otherwise on drawings.
- 3.2.15 Maintain clearance under beams and structural slabs to avoid transmission of structural loads to studs.
 - 3.2.15.1 [Use [50] mm leg ceiling tracks] . [Use double track slip joint [as indicated]] .
- 3.2.16 Install continuous insulating strips to isolate studs from uninsulated surfaces.
- 3.2.17 Install [two continuous beads of acoustical sealant] [insulating strip] under studs and tracks around perimeter of sound control partitions.
- 3.2.18 Curved Partition Tracks:
 - 3.2.18.1 [Shape curving tracks to profiles indicated on drawings in accordance with manufacturer's instructions] [Cut top and bottom track (runners) through leg and web at 50 mm intervals for arc length. In cutting lengths of track, allow for uncut straight lengths minimum 300 mm at ends of arcs.] .
 - 3.2.18.2 Bend track to uniform curve and locate straight lengths so they form a true tangent to arcs.
 - 3.2.18.3 Support outside (cut) leg of track by clinching steel sheet strip, 25 mm high, by thickness of track metal, to inside of cut legs using metal lock fasteners.
 - 3.2.18.4 Begin and end arc with a stud and space intermediate studs equally along arcs at stud spacing recommended in

writing by gypsum board manufacturer for radii indicated.
On straight lengths of minimum 2 studs at ends of arcs,
place studs at 150 mm on centre.

3.3 Cleaning

3.3.1 Progress Cleaning: clean in accordance with Section [01 74 11-
Cleaning] .

3.3.1.1 Leave Work area clean at end of each day.

3.3.2 Final Cleaning: upon completion remove surplus materials, rubbish,
tools and equipment in accordance with Section [01 74 11- Cleaning] .

3.3.3 Waste Management: separate waste materials for [recycling] [reuse]
in accordance with [01 74 19- Waste Management and Disposal] .

3.3.3.1 Remove recycling containers and bins from site and
dispose of materials at appropriate facility.

3.4 Protection

3.4.1 Protect installed products and components from damage during
construction.

3.4.2 Repair damage to adjacent materials caused by non-structural metal
framing application.

END OF SECTION

1. GENERAL

1.1 Reference Standards

- 1.1.1 American National Standards Institute (ANSI)/Ceramic Tile Institute (CTI)
 - 1.1.1.1 ANSI A108.1-[99] , Specification for the Installation of Ceramic Tile (Includes ANSI A108.1A-C, 108.4-.13, A118.1-.10, ANSI A136.1).
 - 1.1.1.2 CTI A118.3-[92] , Specification for Chemical Resistant, Water Cleanable Tile Setting and Grouting Epoxy and Water Cleanable Tile Setting Epoxy Adhesive (included in ANSI A108.1).
 - 1.1.1.3 CTI A118.4-[92] , Specification for Latex Cement Mortar (included in ANSI A108.1).
 - 1.1.1.4 CTI A118.5-[92] , Specification for Chemical Resistant Furan Resin Mortars and Grouts for Tile Installation (included in ANSI A108.1).
 - 1.1.1.5 CTI A118.6-[92] , Specification for Ceramic Tile Grouts (included in ANSI A108.1).
- 1.1.2 American Society for Testing and Materials International (ASTM)
 - 1.1.2.1 ASTM C144-[04] , Specification for Aggregate for Masonry Mortar.
 - 1.1.2.2 ASTM C207-[06] , Specification for Hydrated Lime for Masonry Purposes.
 - 1.1.2.3 ASTM C847-[06] , Specification for Metal Lath.
 - 1.1.2.4 ASTM C979-[05] , Specification for Pigments for Integrally Coloured Concrete.
- 1.1.3 Canadian General Standards Board (CGSB)
 - 1.1.3.1 CAN/CGSB-51.34-[M86(R1988)] , Vapour Barrier, Polyethylene Sheet for Use in Building Construction.
 - 1.1.3.2 CGSB 71-GP-22M-[78(AMEND.)] , Adhesive, Organic, for Installation of Ceramic Wall Tile.
 - 1.1.3.3 CAN/CGSB-75.1-[M88] , Tile, Ceramic.
 - 1.1.3.4 CAN/CGSB-25.20-[95] , Surface Sealer for Floors.
- 1.1.4 Canada Green Building Council (CaGBC)
 - 1.1.4.1 LEED Canada-NC Version 1.0-[2004] , LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Package For New Construction and Major Renovations (including Addendum [2007]).
 - 1.1.4.2 LEED Canada-CI Version 1.0-[2007] , LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Guide For Commercial Interiors.

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- 1.1.5 CSA Group (CSA)
 - 1.1.5.1 CSA A123.3-[05] , Asphalt Saturated Organic Roofing Felt.
 - 1.1.5.2 CAN/CSA-A3000-[03(R2006)] , Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
- 1.1.6 South Coast Air Quality Management District (SCAQMD), California State
 - 1.1.6.1 SCAQMD Rule 1168-[05] , Adhesives and Sealants Applications.
- 1.1.7 Terrazzo Tile and Marble Association of Canada (TTMAC)
 - 1.1.7.1 Tile Specification Guide 09 30 00 [2006/2007] , Tile Installation Manual.
 - 1.1.7.2 Tile Maintenance Guide [2000].

1.2 Action And Informational Submittals

- 1.2.1 Provide submittals in accordance with Section [01 33 00- Submittal Procedures] .
- 1.2.2 Provide product data in accordance with Section [01 33 00- Submittal Procedures] .
 - 1.2.2.1 Include manufacturer's information on:
 - 1.2.2.1.1 Ceramic tile, marked to show each type, size, and shape required.
 - 1.2.2.1.2 Chemical resistant mortar and grout (Epoxy and Furan).
 - 1.2.2.1.3 Cementitious backer unit.
 - 1.2.2.1.4 Dry-set cement mortar and grout.
 - 1.2.2.1.5 Divider strip.
 - 1.2.2.1.6 Elastomeric membrane and bond coat.
 - 1.2.2.1.7 Reinforcing tape.
 - 1.2.2.1.8 Levelling compound.
 - 1.2.2.1.9 Latex cement mortar and grout.
 - 1.2.2.1.10 Commercial cement grout.
 - 1.2.2.1.11 Organic adhesive.
 - 1.2.2.1.12 Slip resistant tile.
 - 1.2.2.1.13 Waterproofing isolation membrane.
 - 1.2.2.1.14 Fasteners.
- 1.2.3 Provide samples in accordance with Section [01 33 00- Submittal Procedures] .
 - 1.2.3.1 Base tile: submit [duplicate] , full-size sample panels of each colour, texture, size, and pattern of tile.

1.3 Quality Assurance

1.3.1 Quality Assurance Submittals:

- 1.3.1.1 Manufacturer's Instructions: manufacturer's installation instructions.
- 1.3.1.2 Manufacturer's Field Reports: manufacturer's field reports specified.

1.4 Delivery, Storage And Handling

1.4.1 Packing, shipping, handling and unloading:

- 1.4.1.1 Deliver, store and handle materials in accordance with Section [01 61 00- Common Product Requirements] .

1.4.2 Waste Management and Disposal:

- 1.4.2.1 Separate waste materials for [recycling] [reuse] in accordance with Section [01 74 19- Waste Management and Disposal] .

1.5 Ambient Conditions

- 1.5.1 Maintain air temperature and structural base temperature at ceramic tile installation area above [12] degrees C for [48] hours before, during, and [48] hours after, installation.
- 1.5.2 Do not install tiles at temperatures less than [12] degrees C or above [38] degrees C.
- 1.5.3 Do not apply epoxy mortar and grouts at temperatures below [15] degrees C or above [25] degrees C.

1.6 Maintenance

1.6.1 Extra Materials:

- 1.6.1.1 Provide maintenance materials in accordance with Section [01 78 00- Closeout Submittals] .
- 1.6.1.2 Provide minimum [2%] of each type and colour of tile required for project for maintenance use. Store where directed.
- 1.6.1.3 Maintenance material same production run as installed material.

2. PRODUCTS

2.1 Floor Tile

- 2.1.1 Porcelain tile: to CAN/CGSB-75.1

2.2 Wall Tile

- 2.2.1 Ceramic tile: to CAN/CGSB-75.1

2.3 Base Tile

- 2.3.1 Base: coved; type, size, colour and texture to match adjacent flooring material.

2.4 Trim Shapes

- 2.4.1 Conform to applicable requirements of adjoining floor and wall tile.
- 2.4.2 Use slip resistant trim shapes for horizontal surfaces of showers, overflow ledges, recessed steps, shower curbs, drying area curbs, and stools.
- 2.4.3 Use trim shapes sizes conforming to size of adjoining field wall tile, including existing spaces, unless specified otherwise.
- 2.4.4 Internal and External Corners: provide trim shapes as follows where indicated.
- 2.4.4.1 Bullnose shapes for external corners including edges.
- 2.4.4.2 Coved shapes for internal corners.
- 2.4.4.3 Special shapes for:
- 2.4.4.3.1 Base to floor internal corners to provide integral coved vertical and horizontal joint.
- 2.4.4.3.2 Base to floor external corners to provide bullnose vertical edge with integral coved horizontal joint. Use as stop at bottom of openings having bullnose return to wall.
- 2.4.4.3.3 Wall top edge internal corners to provide integral coved vertical joint with bullnose top edge.
- 2.4.4.3.4 Wall top edge external corners to provide bullnose vertical and horizontal joint edge.
- 2.4.5 Provide cove and bullnose shapes for [stools] [counter tops] , and where indicated and required to complete tile work.

2.5 Mortar And Adhesive Materials

- 2.5.1 Cement: to CSA-A5, type [10] .
- 2.5.2 Sand: to ASTM C144, passing 16 mesh.
- 2.5.3 Hydrated lime: to ASTM C207, Type [N] [S] [NA] [SA] .
- 2.5.4 Latex additive: formulated for use in cement mortar and thin set bond coat.
- 2.5.5 Water: potable and free of minerals and chemicals which are detrimental to mortar and grout mixes.
- 2.5.6 Adhesives:
- 2.5.6.1 Maximum VOC limit [65] g/L [to SCAQMD Rule 1168] .

2.6 Bond Coat

- 2.6.1 Dry set cement mortar: to ANSI A108.1.
- 2.6.2 Organic adhesive: to [ANSI A136.1] [CGSB 71-GP-22M, Type [2] [1]].
 - 2.6.2.1 Maximum VOC limit [65] g/L [to SCAQMD Rule 1168] .
- 2.6.3 Latex Cement mortar: to ANSI A108.1, two-component universal dry-set mortar.
- 2.6.4 Epoxy bond coat: non-toxic, non-flammable, non-hazardous during storage, mixing, application, and when cured. To produce shock and chemical resistant mortars having the following physical characteristics:
 - 2.6.4.1 Compressive Strength: 246 kg/cm².
 - 2.6.4.2 Bond Strength: 53 kg/cm².
 - 2.6.4.3 Water Absorption: 4.0% Max.
 - 2.6.4.4 Ozone Resistance, 200 hours @ 200 ppm: no loss of strength.
 - 2.6.4.5 Smoke Contribution Factor: 0.
 - 2.6.4.6 Flame Contribution Factor: 0.
 - 2.6.4.7 Finished mortar and grout to be resistant to urine, dilute acid, dilute alkali, sugar, brine and food waste products, petroleum distillates, oil and aromatic solvents.
- 2.6.5 Chemical-Resistant Bond Coat:
 - 2.6.5.1 Epoxy Resin Type: CTI A118.3.
 - 2.6.5.2 Furan Resin Type: CTI A118.5.

2.7 Grout

- 2.7.1 Colouring Pigments:
 - 2.7.1.1 Pure mineral pigments, limeproof and nonfading, complying with ASTM C979.
 - 2.7.1.2 Colouring pigments to be added to grout by manufacturer.
 - 2.7.1.3 Job coloured grout are not acceptable.
 - 2.7.1.4 Use in Commercial Cement Grout, Dry-Set Grout, and Latex Cement Grout.
- 2.7.2 Cement Grout: to ANSI A108.1.
 - 2.7.2.1 Use one part white cement to one part white sand passing a number 30 screen.
- 2.7.3 Commercial Cement Grout: to CTI A118.6.
- 2.7.4 Dry-Set Grout: to CTI A118.6.

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2.7.5 Latex Cement Grout: to ANSI A108.1, fast curing, high early strength, polymer-modified, stain resistant, sanded mix for floors, unsanded mix for walls and floors with polished tiles commercial tile grout.

2.7.6 Chemical-Resistant Grout:

2.7.6.1 Epoxy grout: to ANSI A108.1, having quality, colour and characteristics to match epoxy bond coat. Adhesive and grout by same manufacturer.

2.7.6.2 Furan grout: to CTI A118.5.

2.8 Accessories

2.8.1 Reinforcing mesh: 50 x 50 x 1.6 x 1.6 mm galvanized steel wire mesh, welded fabric design, in flat sheets.

2.8.2 Divider strips:

2.8.2.1 Laminated strips, core 32 x 3 mm black neoprene, outsides (both sides) brass 32 x 1.29 mm complete with anchors, both sides spaced at 150 mm on centre.

2.8.3 Cleavage plane: [polyethylene film to CGSB 51-34] [No. 15 asphalt saturated felt to CSA A123.3] .

2.8.4 Metal lath: to ASTM C847 [painted] [galvanized] finish, 10 mm rib at 2.17 kg/m²

2.8.5 Transition Strips: purpose made metal extrusion; [zinc] [brass] [stainless steel] [anodized aluminum] type.

2.8.6 Reducer Strips: purpose made metal extrusion; [brass] [anodized aluminum] [stainless steel] [zinc] type; maximum slope of 1:2.

2.8.7 Prefabricated Movement Joints: purpose made, having a Shore A Hardness not less than 60 and elasticity of plus or minus 40 percent when used in accordance to TTMAC Detail 301EJ.

2.8.8 Sealant: in accordance with Section [07 92 00- Joint Sealants] .

2.8.8.1 Sealants: maximum VOC limit [250] g/L [to SCAQMD Rule 1168] .

2.8.9 Floor sealer and protective coating: [to tile and grout manufacturers recommendations] [to CAN/CGSB-25.20, Type [2] [1]] .

2.8.10 Thresholds: honed finish to exposed surfaces, size to suit door opening and frame width.

2.8.11 Ceramic Accessories: soap holder; semi-recessed, 150 x 150 mm face dimension combination soap holder and grab bar, colour shall match surrounding wall tile.

2.9 Mixes

2.9.1 Cement:

- 2.9.1.1 Scratch coat: 1 part cement, 1/5 to 1/2 parts hydrated lime to suit job conditions, 4 parts sand, 1 part water, [and latex additive where required] . Adjust water volume depending on water content of sand.
- 2.9.1.2 Slurry bond coat: cement and water mixed to creamy paste. Latex additive may be included.
- 2.9.1.3 Mortar bed for floors: 1 part cement, 4 parts sand, 1 part water. Adjust water volume depending on water content of sand. [Latex additive may be included] .
- 2.9.1.4 Mortar bed for walls and ceilings: 1 part cement, 1/5 to 1/2 parts hydrated lime to suit job conditions, 4 parts sand and 1 part water. Adjust water volume depending on water content of sand. [Latex additive may be included] .
- 2.9.1.5 Levelling coat: 1 part cement, 4 parts sand, minimum 1/10 part latex additive, 1 part water including latex additive.
- 2.9.1.6 Bond or setting coat: 1 part cement, 1/3 part hydrated lime, 1 part water.
- 2.9.1.7 Measure mortar ingredients by volume.
- 2.9.2 Dry set mortar: mix to manufacturer's instructions.
- 2.9.3 Organic adhesive: pre-mixed.
 - 2.9.3.1 Adhesives: maximum VOC limit [65] g/L [to SCAQMD Rule 1168] .
- 2.9.4 Mix bond and levelling coats, and grout to manufacturer's instructions.
- 2.9.5 Adjust water volumes to suit water content of sand.

2.10 Patching And Levelling Compound

- 2.10.1 Cement base, acrylic polymer compound, manufactured specifically for resurfacing and leveling concrete floors. Products containing gypsum are not acceptable.
- 2.10.2 Have not less than the following physical properties:
 - 2.10.2.1 Compressive strength - 25 MPa.
 - 2.10.2.2 Tensile strength - 7 MPa.
 - 2.10.2.3 Flexural strength - 7 MPa.
 - 2.10.2.4 Density - 1.9.
- 2.10.3 Capable of being applied in layers up to 50 mm thick, being brought to feather edge, and being trowelled to smooth finish.
- 2.10.4 Ready for use in 48 hours after application.

2.11 Cleaning Compounds

- 2.11.1 Specifically designed for cleaning masonry and concrete and which will not prevent bond of subsequent tile setting materials including

patching and leveling compounds and elastomeric waterproofing membrane and coat.

2.11.2 Materials containing acid or caustic material are not acceptable.

3. EXECUTION

3.1 Manufacturer's Instructions

3.1.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 Workmanship

3.2.1 Do tile work in accordance with TTMAC Tile Installation Manual 2006/2007, "Ceramic Tile", except where specified otherwise.

3.2.2 Apply tile [or backing coats] to clean and sound surfaces.

3.2.3 Fit tile around corners, fitments, fixtures, drains and other built-in objects. Maintain uniform joint appearance. Cut edges smooth and even. Do not split tiles.

3.2.4 Maximum surface tolerance [1:800] .

3.2.5 Make joints between tile uniform and approximately [1.5 mm] wide, plumb, straight, true, even and flush with adjacent tile. Ensure sheet layout not visible after installation. Align patterns.

3.2.6 Lay out tiles so perimeter tiles are minimum 1/2 size.

3.2.7 Sound tiles after setting and replace hollow-sounding units to obtain full bond.

3.2.8 Make internal angles square, external angles [bullnosed] [rounded] .

3.2.9 Use [round] [bullnose] edged tiles at termination of wall tile panels, except where panel abuts projecting surface or differing plane.

3.2.10 Install divider strips at junction of tile flooring and dissimilar materials.

3.2.11 Allow minimum 24 hours after installation of tiles, before grouting.

3.2.12 Clean installed tile surfaces after installation and grouting cured.

3.3 Wall Tile

3.3.1 Install in accordance with TTMAC detail

3.4 Field Quality Control

3.4.1 Manufacturer's Field Services:

3.4.1.1 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

3.5 Cleaning

3.5.1 Proceed in accordance with Section [01 74 11- Cleaning].

END OF SECTION

1. GENERAL

1.1 Section Includes

- 1.1.1 Edge protection and transition profiles for floors
- 1.1.2 Finishing and edge-protection profiles for walls

1.2 Related Sections

- 1.2.1 Section 07 92 00 Joint Sealants
- 1.2.2 Section 09 30 13 Ceramic Tiling
- 1.2.3 Section 10 26 13 Corner Guards .

1.3 References

- 1.3.1 Terrazzo, Tile and Marble Association of Canada (TTMAC)
Specification Guide 09300 Tile Installation Manual

1.4 Submittals

- 1.4.1 Submit under provisions of Section 01 33 00 Submittal Procedures
- 1.4.2 Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1.4.2.1 Preparation instructions and recommendations
 - 1.4.2.2 Storage and handling requirements and recommendations
 - 1.4.2.3 Installation methods
- 1.4.3 Verification samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) long, representing actual product, colour, and finish.
- 1.4.4 Manufacturer's Certificates: Certify products meet or exceed specified requirements.
- 1.4.5 Warranty document showing duration and scope to be submitted with product submittals.

1.5 Quality Assurance

- 1.5.1 Installer Qualifications: Company specializing in performing the work of this section with minimum five years' experience
- 1.5.2 Source Limitations for Setting Materials and Accessories: Obtain product of a uniform quality for each application condition from a single manufacturer.

1.6 Delivery, Storage, and Handling

- 1.6.1 Store products in manufacturer's unopened packaging until ready for installation

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1.6.2 Protect materials from exposure to moisture. Do not deliver until after wet work is complete and dry

1.6.3 Store materials in a dry, warm, ventilated weathertight location.

1.7 Project Conditions

1.7.1 Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.8 Warranty

1.8.1 Provide sample warranty during submittal process

1.8.2 Acknowledge warranty duration and scope covered by warranty

1.8.3 Coordinate work with other operations and installation of floor finish materials to avoid damage to installed materials

1.8.4 Obtain products of a uniform quality for each premanufactured tile profile, and mortar and waterproofing and uncoupling membrane from a single manufacturer, to maintain the installation system and provide multi-product warranty from selected manufacturer.

1.9 Coordination

1.9.1 Coordinate Work with other operations and installation of floor finish materials to avoid damage to installed materials.

2. PRODUCTS

2.1 Manufacturers

2.1.1 Acceptable Manufacturer: Schluter Systems (Canada) Inc., 21100 Chemin Ste-Marie, Ste-Anne-de-Bellevue, QC H9X 3Y8. Tel: (800) 667-8746. Email: specassist@schluter.com; Web: www.schluter.ca

2.1.2 Requests for substitutions will be considered in accordance with provisions of Section 01 25 00 Substitution Procedure

2.2 Edge Protection and Transition Profiles for Floors

2.2.1 As indicated on drawings

2.3 Finishing and Edge Protection Profiles for Walls

2.3.1 As indicated on drawings

3. EXECUTION

3.1 Examination

3.1.1 Do not begin installation until substrates have been properly prepared

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- 3.1.2 If substrate preparation is the responsibility of another installer, notify Consultant of unsatisfactory preparation before proceeding

3.2 Preparation

- 3.2.1 Clean surfaces thoroughly prior to installation
- 3.2.2 Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 Installation

- 3.3.1 Install in accordance with manufacturer's instructions

3.4 Protection

- 3.4.1 Protect installed products until completion of project
- 3.4.2 Touch-up, repair or replace damaged products before Substantial Completion

END OF SECTION

1. GENERAL

1.1 Related Requirements

- 1.1.1 Section 23 30 00 HVAC Air Distribution: Air inlets and outlets to be coordinated with ceiling work.

1.2 Reference Standards

- 1.2.1 ASTM International
- 1.2.1.1 ASTM C423-[09] , Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
 - 1.2.1.2 ASTM E580/E580M-[14] Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions.
 - 1.2.1.3 ASTM C635/C635M-[13a] , Standard Specifications for the Manufacture, Performance and Testing of Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings.
 - 1.2.1.4 ASTM C636/C636M-[08] , Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.
 - 1.2.1.5 ASTM E1264-[14] , Standard Classification for Acoustical Ceiling Products.
 - 1.2.1.6 ASTM E1414/E1414M [11ae1] Standard Test Method for Sound Attenuation between Rooms Sharing a Common Ceiling Plenum.
 - 1.2.1.7 ASTM E1477-[98a(2013)] , Standard Test Method for Luminous Reflectance Factor of Acoustical Materials by Use of Integrating-Sphere Reflectometers.
 - 1.2.1.8 ASTM F1667-[15] Standard Specification for Driven Fasteners: Nails, Spikes and Staples.
- 1.2.2 Canadian General Standards Board (CGSB)
- 1.2.2.1 CAN/CGSB-51.34-[M86] , Vapour Barrier, Polyethylene Sheet, for Use in Building Construction and Amendment No. 1 [1988] .
- 1.2.3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
- 1.2.3.1 Material Safety Data Sheets (MSDS).
- 1.2.4 Underwriter's Laboratories of Canada (ULC)
- 1.2.4.1 CAN/ULC-S102-[2003] , Surface Burning Characteristics of Building Materials and Assemblies.

1.3 Coordination

- 1.3.1 Do not begin erection of ceiling suspension system until work above ceiling has been inspected by Consultant.

1.4 Pre-Installation Meeting

- 1.4.1 Convene pre-installation meeting [one] week prior to beginning [on-site installation] [work of this Section] , with Consultant in accordance with [Section 01 32 16.19- Construction Progress Schedule - Bar (GANTT) Chart] [Section 01 32 16.16- Construction Progress Schedule - Critical Path Method (CPM)] to:
- 1.4.1.1 Verify project requirements.
 - 1.4.1.2 Review installation and substrate conditions.
 - 1.4.1.3 Co-ordination with work of other sections.
 - 1.4.1.4 Review [manufacturer's] installation instructions and warranty requirements.
 - 1.4.1.5 Review accepted shop drawings for installation requirements.

1.5 Action And Informational Submittals

- 1.5.1 Submit samples in accordance with Section [01 33 00- Submittal Procedures] .
- 1.5.2 Product Data:
- 1.5.2.1 Submit manufacturer's instructions, printed product literature and data sheets for acoustical suspension, acoustic panels, [acoustic tiles] , and system accessories. Include product characteristics, performance criteria, physical size, finish and limitations.
- 1.5.3 Shop Drawings:
- 1.5.3.1 Submit reflected ceiling plans for special grid patterns as indicated.
 - 1.5.3.2 Indicate [lay-out] , [insert and hanger spacing and fastening details] , [splicing method for main and cross runners] , [change in level details] [location of access splines] , [access door dimensions, and locations] and [acoustical unit support at ceiling fixture] [lateral bracing and accessories] .
- 1.5.4 Delegated Design Submittals:
- 1.5.4.1 Submit delegated design shop drawings stamped and signed by professional engineer registered or licensed in Ontario, Canada.
 - 1.5.4.2 [Indicate components and installation methods to conform to specified seismic design and construction requirements

of Contract Documents [and in general accordance with ASTM E580/E580M]] .

- 1.5.4.3 [Include supporting details, treatment of cross runners, main runners, and wall closures at terminal ends, suspension wire, lateral force bracing, light fixtures and services within the ceiling, seismic isolation joints and partition bracing] .

1.5.5 Samples:

- 1.5.5.1 Submit for review and acceptance of each component specified or necessary for complete installation. Include technical descriptive data.
- 1.5.5.2 Submit duplicate samples of each component proposed for use in [each type of] ceiling suspension system.
- 1.5.5.3 Submit duplicate [full size] [150 mm x 100 mm] samples of [each type of] acoustical unit.

1.6 Closeout Submittals

- 1.6.1 Submit in accordance with [Section 01 78 00- Closeout Submittals] .
- 1.6.2 Submit operation and maintenance data for acoustical suspension for incorporation into manual.
- 1.6.3 Submit final certificate from design professional responsible for delegated detail design of ceiling indicating conformity with accepted shop drawings.
- 1.6.4 Submit Contractor's sustainable design and construction verification in accordance with [Section 01 33 29- Sustainable design reporting] .

1.7 Maintenance Materials

- 1.7.1 Provide extra acoustical units in accordance with Section [01 78 00- Closeout Submittals] .
- 1.7.2 Provide acoustical units amounting to [2] % of gross ceiling area for each pattern and type of acoustical panel [or tile] , suspension system and trim required for project, minimum 1 complete factory-sealed package of each.
- 1.7.3 Ensure extra materials are from same production run as installed materials.
- 1.7.4 Deliver extra materials for each type of acoustical unit in original unopened packages clearly identified, including colour and texture.
- 1.7.5 Deliver to Consultant , upon completion of the work of this section.

1.8 Certifications

- 1.8.1 Fire-resistance rated suspension system: certified by a Canadian Certification Organization accredited by Standards Council of Canada.

- 1.8.2 Certifications: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements. Include certification of sustainable requirements.

1.9 Mock-Ups

- 1.9.1 Construct mock-ups in accordance with Section [01 45 00- Quality Control] .
- 1.9.2 Construct mock-up [10] m2minimum of [each type] acoustical ceiling assembly including [one inside corner] [one outside corner] . Ceiling system mock-up to show basic construction and assembly, treatment at walls, recessed fixtures, splicing, interlocking, finishes, acoustical unit installation, [seismic reinforcing] .
- 1.9.3 Construct mock-up where directed.
- 1.9.4 Allow [24] hours for inspection of mock-up by Consultant before proceeding with ceiling work.
- 1.9.5 When accepted, mock-up will demonstrate minimum standard for this work. Mock-up may [not] remain as part of the finished work.

1.10 Delivery, Storage And Handling

- 1.10.1 Deliver, store and handle materials in accordance with Section [with manufacturer's written instructions] [01 61 00- Common Product Requirements] .
- 1.10.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- 1.10.3 Storage and Handling Requirements:
 - 1.10.3.1 Store materials flat, [indoors] [in dry location] and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - 1.10.3.2 Store and protect acoustical ceiling [tiles] [panels] suspension grid components from nicks, scratches, and blemishes.
 - 1.10.3.3 Replace defective or damaged materials with new.
 - 1.10.3.4 Store extra materials required for maintenance, where directed by Consultant .
- 1.10.4 Waste Management and Disposal:
 - 1.10.4.1 Separate waste materials for [reuse] [recycling] or disposal in accordance with Section [01 74 19- Construction /Demolition Waste Management and Disposal] .

1.11 Environmental Requirements

- 1.11.1 Permit wet work to dry before beginning to install.
- 1.11.2 Maintain uniform minimum temperature of [15] degrees C and humidity of [20] % before and during installation.[40]
- 1.11.3 Store materials in work area [48] hours prior to installation.

2. PRODUCTS

2.1 Design Criteria

- 2.1.1 Design Requirements:
 - 2.1.1.1 [Light] [Intermediate] [Heavy] duty system to ASTM C 635/ASTM C635M.
 - 2.1.1.2 Maximum deflection: 1/360th of span to ASTM C 635/ASTM C635M deflection test.
- 2.1.2 [Seismic design requirements:]
 - 2.1.2.1 [Design acoustical ceiling installation to resist effects of earthquake motions under seismic design conditions specified in Contract Documents. Provide components as necessary to implement design] .

2.2 Sustainable Requirements

- 2.2.1 Materials and products in accordance with Section [01 47 15- Sustainable Requirements: Construction] .
- 2.2.2 [Ecolabel certified]
 - 2.2.2.1 [Cellulose fibre with minimum [75] % recycled content] .
 - 2.2.2.2 [Glass fibre with minimum [35] % recycled content] .
 - 2.2.2.3 [Mineral fibre with minimum [35] % recycled content] .
- 2.2.3 [Metallic suspension system with recycled content] .
- 2.2.4 [Low VOC-emitting materials] .

2.3 Acoustical Ceiling Suspension

- 2.3.1 Acoustical Ceiling Suspension system: non fire rated to match existing.
 - 2.3.1.1 Manufacturer: CGC
 - 2.3.1.2 Series/Pattern: DXT Quick Release
- 2.3.2 Basic materials for suspension system: [mill finished] [commercial quality cold rolled steel] [aluminum sheet] [zinc coated] .
- 2.3.3 Exposed tee bar grid components: [colour] [clear anodized] [black] [white] [shop painted satin sheen] . Components die cut. Main tee with double web, rectangular bulb and 25 mm rolled cap on exposed face. [Cross tee with rectangular bulb; web extended to form positive

interlock with main tee webs; lower flange extended and offset to provide flush intersection] .

2.3.4 Hanger wire: galvanized soft annealed steel wire:

2.3.4.1 [3.6] mm diameter for access tile ceilings.

2.3.4.2 To ULC design requirements for fire rated assemblies.

2.3.4.3 [2.6] mm diameter for [other] ceilings.

2.3.5 Hanger inserts: purpose made.

2.3.6 Carrying channels: 38 x [] steel.[]

2.3.7 Accessories: splices, clips, wire ties, retainers and wall moulding [reveal] [flush] , to complement suspension system components, as recommended by system manufacturer.

2.3.8 [Seismic components and accessories: in accordance with accepted shop drawings] .

2.4 Acoustical Ceiling Panels

2.4.1 Acoustical Panel: to match existing.

2.5 Accessories

2.5.1 Fibrous acoustical media: to CAN/ULC S702, [] spacers, [] , and [] to CAN/ULC-S102 [][with] [without]

2.5.2 Spacers: [][]

2.5.3 Polyethylene: to CAN/CGSB-51.34, 0.15 mm thick.

2.5.4 Hold down clips: purpose made clips to secure [panel] [tile] to suspension system, approved for use in fire-rated systems.

2.5.5 Edge trim for floating ceilings: Sheet metal channels, []

3. EXECUTION

3.1 Examination

3.1.1 Verify conditions of substrates previously installed under other Sections or Contracts are acceptable for acoustical ceiling tile and track installation in accordance with manufacturer's written instructions.

3.1.1.1 Visually inspect substrate in presence of Consultant.

3.1.1.2 Inform Consultant of unacceptable conditions immediately upon discovery.

3.1.1.3 Proceed with installation only after unacceptable conditions have been remedied [and after receipt of written approval to proceed from Consultant.

3.2 Interface With Other Work

- 3.2.1 Co-ordinate ceiling work to accommodate components of other sections, such as light fixtures, diffusers, speakers, sprinkler heads, to be built into acoustical ceiling components.

3.3 Suspension System Installation

- 3.3.1 Comply with manufacturer's written installation instructions and recommendations, including product technical bulletins, product carton installation instructions, and data sheets.
- 3.3.2 Install suspension system in accordance with accepted shop drawings, [Certification Organizations tested design requirements] and ASTM C636/C636M except where specified otherwise.
- 3.3.3 Lay out [system according to reflected ceiling plan] [with border units not less than 50% of standard unit width] [centre line of ceiling both ways, to provide balanced borders at room perimeter] .
- 3.3.4 Finished ceiling system to be square with adjoining walls and level within 1:1000.
- 3.3.5 Secure hangers to overhead structure using attachment methods [as indicated] [acceptable to Consultant.
- 3.3.6 Install hangers spaced at maximum [1200] mm centres and within [150] mm from ends of main tees.
- 3.3.7 Ensure suspension system is coordinated with location of related components. Provide carrying channels as necessary to bridge at unavoidable interference between suspension system and other work above ceiling.
- 3.3.8 Install wall moulding to provide correct ceiling height.
- 3.3.9 Completed suspension system to support super-imposed loads, such as [lighting fixtures] [grilles] [diffusers] and [speakers] .
- 3.3.10 Support at [diffusers] [light fixtures] with additional ceiling suspension hangers within [150] mm of each corner and at maximum [600] mm around perimeter of fixture.
- 3.3.11 [Interlock] [Attach] cross member to main runner to provide rigid assembly.
- 3.3.12 Frame at openings for light fixtures, air diffusers, speakers and at changes in ceiling heights.
- 3.3.13 Install access splines to provide [25] [10] [50] % ceiling access.
- 3.3.14 Expansion joints:
 - 3.3.14.1 Erect two main runners parallel, [25] [50] mm apart, on building expansion joint line. Lay in strip of acoustic tile/board, [painted black] , 25% narrower than space between 2 'T' bars.

3.3.14.2 Supply and install "Z" shaped metal trim pieces at each side of expansion joint. Design to accommodate plus or minus 25 mm movement and maintain visual closure. Finish metal components to match adjacent exposed metal trim. Provide backing plates behind butt joints.

3.3.15 Install perimeter trim at floating installations securely anchored to suspension system, in accurate alignment with adjacent assemblies. Install curved trim members in smooth curves to radius indicated.

3.4 Acoustical Ceiling Panel Installation

3.4.1 Install lay-in acoustical panels in ceiling suspension system in accordance with manufacturer's instructions and as indicated.

3.4.2 Install fibrous acoustical media [and spacers] over entire area above [suspended metal panels] .

3.4.3 In fire rated ceiling systems, secure lay-in panels with hold-down clips and protect over light fixtures, diffusers, air return grilles and other appurtenances according to Certification Organizations design requirements.

3.5 Site Quality Control

3.5.1 Arrange for periodic site visits by design professional responsible for delegated ceiling design work to review installed work for conformity to design.

3.5.2 Arrange for periodic site visits by manufacturer's representative to review installed work for conformity to manufacturer's installation instructions and recommendations.

3.5.3 Submit written site reports by site supervisor to Consultant within [3] days of visit.

3.6 Cleaning

3.6.1 Progress Cleaning: clean in accordance with [Section 01 74 00- Cleaning] .

3.6.1.1 Leave Work area clean at end of each day.

3.6.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with [Section 01 74 00- Cleaning] .

3.6.2.1 Touch up scratches, abrasions, voids and other defects in painted surfaces.

3.6.3 Waste Management: separate waste materials for [reuse] [recycling] in accordance with Section [01 74 19- Waste Management and Disposal] .

3.7 Protection

- 3.7.1 Protect installed products and components from damage during construction.
- 3.7.2 Repair damage to adjacent materials caused by acoustical suspension installation.

3.8 Schedule

- 3.8.1 [Acoustic panel ceiling assembly APC] : [suspension grid ACS with acoustic panel AP] .
- 3.8.2 [Acoustic panel ceiling assembly APC] : [suspension grid ACS with acoustic panel AP] .

END OF SECTION

1. GENERAL

1.1 Reference Standards

- 1.1.1 American National Standards Institute (ANSI)/Tile Council of North America
 - 1.1.1.1 ANSI A108/A118 /A136.1-[2013] , American National Specification for the Installation of Ceramic Tile - A Collection of 20 ANSI A108.1A-C, 108.4-13, A118.1-10, ANSI A136.1.
 - 1.1.1.2 ANSI A208.1-[09] , Particleboard.
- 1.1.2 ASTM International
 - 1.1.2.1 ASTM C144-[11] , Standard Specification for Aggregate for Masonry Mortar.
 - 1.1.2.2 ASTM C150/C150M-[12] , Standard Specification for Portland Cement.
 - 1.1.2.3 ASTM C207-[06(2011)] , Standard Specification for Hydrated Lime for Masonry Purposes.
 - 1.1.2.4 ASTM C568/C568M-[10] , Standard Specification for Limestone Dimension Stone.
 - 1.1.2.5 ASTM C615/C615M-[11] , Standard Specification for Granite Dimension Stone.
 - 1.1.2.6 ASTM C629/C629M-[10] , Standard Specification for Slate Dimension Stone.
 - 1.1.2.7 ASTM C847-[14] , Standard Specification for Metal Lath.
- 1.1.3 Canadian General Standards Board (CGSB)
 - 1.1.3.1 CAN/CGSB-51.34-[M86(R1988)] , Vapour Barrier, Polyethylene Sheet for Use in Building Construction.
- 1.1.4 CSA Group
 - 1.1.4.1 CSA A3000-[13] , Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
 - 1.1.4.2 CSA O151-[09(R2014)] , Canadian Softwood Plywood.
 - 1.1.4.3 CAN/CSA-Z809-[08(R2013)] , Sustainable Forest Management.
- 1.1.5 Forest Stewardship Council (FSC)
 - 1.1.5.1 FSC-STD-01-001 (V4-0)-[2013] , FSC Principle and Criteria for Forest Stewardship.
- 1.1.6 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - 1.1.6.1 Material Safety Data Sheets (MSDS).

- 1.1.7 South Coast Air Quality Management District (SCAQMD)
 - 1.1.7.1 SCAQMD Rule 1168-[A2011] , Adhesive and Sealant Applications.
- 1.1.8 Sustainable Forestry Initiative (SFI)
 - 1.1.8.1 SFI-[2010-2014] Standard.
- 1.1.9 Terrazzo Tile and Marble Association of Canada (TTMAC)
 - 1.1.9.1 Tile Specification Guide 09 30 00 [2013] , Tile Installation Manual.
 - 1.1.9.2 Tile Maintenance Guide [2000] .
- 1.1.10 Tile Council of America (TCA), Inc.
 - 1.1.10.1 2014 Handbook for Ceramic, Glass and Stone Tile Installation.

1.2 Action And Informational Submittals

- 1.2.1 Submit in accordance with Section [01 33 00- Submittal Procedures] .
- 1.2.2 Product Data:
 - 1.2.2.1 Submit manufacturer's instructions, printed product literature and data sheets for [stone flooring] and include product characteristics, performance criteria, physical size, finish and limitations.
- 1.2.3 Shop Drawings:
 - 1.2.3.1 Submit drawings stamped and signed by professional engineer registered or licensed in [Province] [] [Territory]<options>North West Territories</options >] , Canada.
 - 1.2.3.2 Indicate on drawings special patterns
- 1.2.4 Samples:
 - 1.2.4.1 Submit [300 x 300] [1] mm size panel c/w approved grout colour; mounted to [19] mm thick plywood backer.
- 1.2.5 Wood Certification: submit [manufacturer's] [vendor's] Chain-of-Custody Certificate number for CAN/CSA-Z809 or FSC or SFI certified wood.

1.3 Closeout Submittals

- 1.3.1 Submit [2] copies of [TCA] [TTMAC] maintenance recommendations to [DCC Representative] [Departmental Representative] [Consultant] in accordance with Section [01 78 00- Closeout Submittals] .
- 1.3.2 Provide specific warning of maintenance practices or materials that may damage or disfigure finished work.

- 1.3.3 Submit product data [WHMIS MSDS] sheets for floor sealer products.
- 1.3.4 Where more than one manufacturer's products are part of single tile assembly, arrange for each manufacturer to submit written statement compatibility with respect to other manufacturers' materials.

1.4 Maintenance Material Submittals

- 1.4.1 Extra Materials:
 - 1.4.1.1 Provide extra stock in accordance with Section [01 78 00- Closeout Submittals] .
 - 1.4.1.2 Extra Stock: [4] m² or 2 %, whichever is greater, of each type and colour of tile; marked to identify:
 - 1.4.1.2.1 Manufacturer's name.
 - 1.4.1.2.2 Product's name.
 - 1.4.1.2.3 Product colour and pattern.
 - 1.4.1.3 Package tile products in original containers, to prevent damage.

1.5 Quality Assurance

- 1.5.1 Qualifications:
 - 1.5.1.1 Installer's Qualifications: skilled, trained and experienced in tile work and registered as members of [Marble Institute of America] [Terrazzo Tile and Marble Association of Canada] [Tile Council of America, Inc.] .
- 1.5.2 Certified Wood: submit listing of wood products and materials used in accordance with CAN/CSA-Z809 or FSC or SFI.

1.6 Delivery, Storage And Handling

- 1.6.1 Deliver, store and handle materials in accordance with Section [with manufacturer's written instructions] [01 61 00- Common Product Requirements] .
- 1.6.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- 1.6.3 Storage and Handling Requirements:
 - 1.6.3.1 Store materials [off ground] [indoors] [in dry location] and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - 1.6.3.2 Store and protect [specified materials] from [nicks, scratches, and blemishes] .
 - 1.6.3.3 Replace defective or damaged materials with new.

- 1.6.4 Packaging Waste Management: remove for reuse [and return] [by manufacturer] of [pallets,] [packaging materials] [padding,] [crates,] in accordance with Section [01 74 19- Waste Management and Disposal] .

1.7 Site Conditions

- 1.7.1 Ambient Conditions:
- 1.7.1.1 Do not install tiles at temperatures less than [12] degrees C or above [38] degrees C.
- 1.7.1.2 Maintain temperatures at or above [12] degrees C until cementitious materials have fully cured.
- 1.7.1.3 Do not apply epoxy mortar and grouts at temperatures below [20] degrees C or above [35] degrees C.

2. PRODUCTS

2.1 Tile Materials

- 2.1.1 As indicated on drawings
- 2.1.2 Stone Base: [non-] coved; type, size, colour and texture to match adjacent flooring material.

2.2 Mortar Materials

- 2.2.1 Portland Cement: to [CSA A3000, Type 10] [ASTM C150/C150M, Type I] .
- 2.2.2 Hydrated Lime: to ASTM C207, Type [N] [NA] .
- 2.2.3 Sand: to ASTM C144, passing 16 mesh.
- 2.2.4 Dry-Set Portland Cement Mortar: to ANSI A118.1.
- 2.2.5 Latex-Portland Cement Mortar: to ANSI A118.4.

2.3 Grout Materials

- 2.3.1 Commercial Portland Cement Grout: to ANSI A118.6.
- 2.3.2 Latex-Portland Cement Grout: to ANSI A118.6.
- 2.3.3 Epoxy Adhesive and Grout: to ANSI A118.3.
- 2.3.3.1 Maximum VOC limit [65] g/L [to SCAQMD Rule 1168] .
- 2.3.3.1.1 []
- 2.3.3.1.2 Adhesives: maximum VOC limit []
- 2.3.4 Furan Mortars and Grout: to ANSI A118.5.

2.4 Accessories

- 2.4.1 Underlay: in accordance with Section [16 mm] [06 10 00- Rough Carpentry] thick spruce plywood; to [CSA O151, G1S] [APA Exterior Grade] .
 - 2.4.1.1 CAN/CSA-Z809 or FSC or SFI certified.
 - 2.4.1.1.1 Urea-formaldehyde free.
 - 2.4.1.2 Particleboard Underlayment: to ANSI A208.1, [Grade PBU] [Grade M-2, Exterior Glue, complying with dimensional tolerances and thickness swell requirements of Grade PBU] .
- 2.4.2 Cleavage Membrane: [0.15] mm thick polyethylene film, [to CAN/CGSB-51.34] .
- 2.4.3 Reinforcing Mesh: [50 x 50] mm size; [1.6] mm thick steel wire mesh; welded fabric, galvanized.
- 2.4.4 Metal Lath: galvanized type, [1.4] kg/m²[_____]
- 2.4.5 Adhesives: in accordance with Section [07 92 00- Joint Sealants] .
 - 2.4.5.1 Organic Adhesive: to ANSI A136.1, Type [1] [2] .
 - 2.4.5.1.1 Adhesives: [_____]
 - 2.4.5.1.2 Adhesives: maximum VOC limit [65] g/L [to SCAQMD Rule 1168] .
- 2.4.6 Latex Additive: formulated for use in cement mortars and grout.
- 2.4.7 Thresholds: [_____] , [slate] [limestone] [granite] , honed finish on exposed surfaces, size to suit door opening and frame width.[round edges] [bevelled [one side] [_____]<options>two sides</options >]
- 2.4.8 Water: clean, cold and potable.
 - 2.4.8.1 Maximum VOC limit [50] g/L [to SCAQMD Rule 1168] .
- 2.4.9 Sealant: in accordance with Section [07 92 00- Joint Sealants] .
 - 2.4.9.1 Sealant: [_____]
 - 2.4.9.2 Sealants: maximum VOC limit [50] g/L [to SCAQMD Rule 1168] .
- 2.4.10 Sealer: as recommended by sealer manufacturer for intended application.
 - 2.4.10.1 Floor sealer: maximum VOC limit [50] g/L [to SCAQMD Rule 1168] .

2.5 Mixes

- 2.5.1 Scratch Coat:
 - 2.5.1.1 2 parts cement.

- 2.5.1.2 1 part hydrated lime.
 - 2.5.1.3 4 parts sand.
 - 2.5.1.4 Latex additive as desired.
 - 2.5.1.5 Water, sufficient to obtain workability.
 - 2.5.1.6 Premixed mortar may be used in accordance with manufacturer's written instructions.
 - 2.5.1.7 Adjust water volume depending on moisture content of sand to obtain consistency and workability.
- 2.5.2 Slurry Bond Coat:
 - 2.5.2.1 Cement and water, mixed to creamy paste consistency.
 - 2.5.2.2 Include latex additive where required by TTMAC detail.
- 2.5.3 Mortar Bed for Walls:
 - 2.5.3.1 2 parts cement.
 - 2.5.3.2 1 part hydrated lime.
 - 2.5.3.3 4 parts sand.
 - 2.5.3.4 Latex additive as desired.
 - 2.5.3.5 Water, sufficient volume to obtain workability.
 - 2.5.3.6 Premixed mortar may be used in accordance with manufacturer's written instructions.
 - 2.5.3.7 Adjust water volume depending on moisture content of sand to obtain consistency and workability
- 2.5.4 Levelling Coat:
 - 2.5.4.1 1 part cement.
 - 2.5.4.2 4 parts sand.
 - 2.5.4.3 Latex additive as per manufacturer's instructions.
 - 2.5.4.4 Premixed mortar may be used in accordance with manufacturer's written instructions.
- 2.5.5 Mortar Bed for Floors:
 - 2.5.5.1 1 part cement.
 - 2.5.5.2 4 parts sand.
 - 2.5.5.3 Latex additive as desired.
 - 2.5.5.4 Water, sufficient volume to obtain consistency and workability that will allow maximum compaction during tamping of mortar bed.
 - 2.5.5.5 Premixed mortar may be used in accordance with manufacturer's written instructions.
 - 2.5.5.6 Adjust water volume depending on moisture content of sand to obtain consistency and workability.
 - 2.5.5.7 Mortar bed mixed with water:

- 2.5.5.7.1 Have consistency and workability permitting maximum compaction during tamping of mortar bed.
- 2.5.5.7.2 Achieve minimum compressive strength of [15] MPa after 28 days.

3. **EXECUTION**

3.1 **Examination**

- 3.1.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for stone flooring installation in accordance with manufacturer's written instructions.
 - 3.1.1.1 Inform [Consultant] of unacceptable conditions immediately upon discovery.
 - 3.1.1.2 Proceed with installation only after unacceptable conditions have been remedied [and after receipt of written approval to proceed from [Consultant]] .
- 3.1.2 Verify substrate surfaces are clean, dimensionally stable, cured and free of contaminants such as oil, sealers and curing compounds.
- 3.1.3 Verify that concrete has been allowed to cure for minimum of [preferably 90 days or longer] [28 days] .
- 3.1.4 Verify concrete floors have not been treated with proprietary curing compounds.
- 3.1.5 Verify concrete floors scheduled to receive thin-set applied tile or cleavage membranes are steel trowelled to fine broom finish.
 - 3.1.5.1 Ensure concrete slabs have been finished with maximum permissible variation of [3 mm in 3049 mm] from required plane and not more than [1.5 mm in 300 mm] when measured from high points in surface.
- 3.1.6 Verify concrete floors scheduled to receive tile applied over bonded mortar bed have been screed finished.
 - 3.1.6.1 Verify substrate surface variation does not exceed [6 mm in 3049 mm] .
- 3.1.7 Beginning of installation implies acceptance of existing conditions.
- 3.1.8 Report in writing any unsuitable conditions to [Consultant] . Proceed with work only after written instruction is received from [Consultant] .

3.2 **Manufacturer's Instructions**

- 3.2.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.3 Preparation

- 3.3.1 Protect surrounding work from damage or disfiguration.
- 3.3.2 Clean surfaces which are to receive tile finish to ensure removal of grease, oil or dust film.
- 3.3.3 Securely screw or staple underlay to subfloor, smooth face up. Space sheets [6] mm apart.
- 3.3.4 Apply latex cementitious levelling coat wherever slight substrate irregularity exists.
 - 3.3.4.1 Limit levelling coat thickness to less than [8] mm where thin-set tile methods are to be used.
 - 3.3.4.2 Set levelling coat in excess of [8] mm with mortar bed method.
- 3.3.5 Install cleavage membrane over structural slab.
 - 3.3.5.1 Lay [6] mm thick sand-bed under cleavage membrane when cleavage membrane is installed over rough substrate.

3.4 Installation

- 3.4.1 Install materials to requirements of [TTMAC Tile Installation Manual - Specification Guide 09300] [TCA Handbook for Ceramic Tile Installation] , as scheduled below.
- 3.4.2 Fit tile units around corners, fitments, fixtures, drains and other built-in objects to maintain uniform joint appearance.
- 3.4.3 Make cut edges smooth, even and free from chipping. Do not split tile.
- 3.4.4 Lay out tiles as indicated so that perimeter and cut tiles are no less than half size.
- 3.4.5 Set tiles in place while bond coat is wet and tacky, prior to skinning over. Slide tile back and forth to ensure a proper bond and level surface. Avoid slippage.
- 3.4.6 Clean backs of tiles and back butter tiles to ensure a [95] % bond coverage.
- 3.4.7 Clean excess mortar from surface prior to final set.
- 3.4.8 Sound tiles after setting materials have cured and replace hollow sounding tile before grouting.
- 3.4.9 Exterior Surfaces and Wet Areas (Thin Set Method).
 - 3.4.9.1 Notch adhesive in straight lines, back butter tile and set on freshly trowelled thin-set mortar.
 - 3.4.9.2 Move tile back and forth perpendicular to notches.
- 3.4.10 Ungauged [Stone] [Marble] Tiles.

3.4.10.1 Immediately prior to setting, back butter tile through push box or box screed to achieve a uniform thickness of tile and mortar.

3.4.11 Keep 2/3 of depth of grout joints free of setting material.

3.5 Control Joints

3.5.1 []

Environment	Minimum	Maximum	Joint Width
Interior	[4878] mm	[6098] mm	[6] mm minimum
Interior/Sunlight	[3659] mm	[4878] mm	[6] mm minimum
Exterior-Normal	[2439] mm	[3659] mm	[10] mm minimum
Exterior-Excessive	[2439] mm	[3049] mm	[13] mm minimum

3.5.2 Install control joints and expansion joints in tile work in accordance with [TCA Detail EJ171] [TTMAC Detail 301EJ] .

3.5.3 Keep control and expansion joints free of setting materials.

3.6 Grouting

3.6.1 Allow proper setting time prior to grouting. Sound tiles after setting materials have cured and replace hollow sounding tile before grouting.

3.6.2 Preseal tiles requiring protection from grout staining.

3.6.3 Force grout into joints to ensure dense finish.

3.6.4 Remove excess and polish with clean cloths.

3.7 Tolerances

3.7.1 Level tiles to conform to [1] mm tolerance over [3] mm joint.

3.8 Cleaning

3.8.1 Progress Cleaning: clean in accordance with Section [01 74 11- Cleaning] .

3.8.1.1 Leave Work area clean at end of each day.

3.8.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section [01 74 11- Cleaning] .

3.8.2.1 Apply floor sealer in accordance with manufacturer's instructions.

3.8.3 Waste Management: separate waste materials for [recycling] [reuse] in accordance with Section [01 74 19- Waste Management and Disposal] .

- 3.8.3.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.9 Protection

- 3.9.1 Protect finished areas from traffic until setting materials have sufficiently cured.
- 3.9.2 Protect grouted areas from traffic for [24] hours after grouting.
- 3.9.3 Provide protective covering until Completion of Contract.
- 3.9.4 Protect wall tiles and bases from impact, vibration, heavy hammering on adjacent and opposite walls for at least [14] days after installation.

END OF SECTION

1. GENERAL

1.1 Reference Standards

- 1.1.1 ASTM International (ASTM)
 - 1.1.1.1 ASTM C501-[84(2009)] , Standard Test Method for Relative Resistance to Wear of Unglazed Ceramic Tile by Taber Abraser.
 - 1.1.1.2 ASTM D2047-[04] , Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine.
 - 1.1.1.3 ASTM F1066-[04] , Standard Specification for Vinyl Composition Floor Tile.
 - 1.1.1.4 ASTM F1303-[04(2009)] , Standard Specification for Sheet Vinyl Floor Covering with Backing.
 - 1.1.1.5 ASTM F1344- [15] , Standard Specification for Rubber Floor Tile.
- 1.1.2 Canada Green Building Council (CaGBC)
- 1.1.3 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
 - 1.1.3.1 SCAQMD Rule 1113- [A2007] , Architectural Coatings.
 - 1.1.3.2 SCAQMD Rule 1168-[A2005] , Adhesives and Sealants Applications.

1.2 Action And Informational Submittals

- 1.2.1 Submit in accordance with Section [01 33 00- Submittal Procedures] .
- 1.2.2 Product Data:
 - 1.2.2.1 Submit manufacturer's instructions, printed product literature and data sheets for [flooring, adhesive, primer, sealer,] and include product characteristics, performance criteria, physical size, finish and limitations.
 - 1.2.2.2 Submit [2] copies of WHMIS MSDS in accordance with Section [01 35 29.06- Health and Safety Requirements] [01 35 43- Environmental Procedures] .
- 1.2.3 Samples:
 - 1.2.3.1 Submit for review and acceptance of each unit.
 - 1.2.3.2 Samples will be returned for inclusion into work.
 - 1.2.3.3 Submit duplicate 300 x 300 mm sample pieces of sheet material.
 - 1.2.3.4 Submit duplicate full size samples of [each type] of tile.
 - 1.2.3.5 Submit 300 mm long [base] and [edge strips] .

1.3 Closeout Submittals

- 1.3.1 Submit in accordance with Section [01 78 00- Closeout Submittals] .
- 1.3.2 Operation and Maintenance Data: submit operation and maintenance data for [resilient flooring] for incorporation into manual.

1.4 Delivery, Storage And Handling

- 1.4.1 Deliver, store and handle materials in accordance with Section [01 61 00- Common Product Requirements] [with manufacturer's written instructions] .
- 1.4.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- 1.4.3 Storage and Handling Requirements:
 - 1.4.3.1 Store materials [in dry location] [indoors] [off ground] and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - 1.4.3.2 Store and protect [resilient flooring] from [nicks, scratches, and blemishes] .
 - 1.4.3.3 Replace defective or damaged materials with new.
- 1.4.4 Packaging Waste Management: remove for reuse [by manufacturer] [and return] of [crates,] [padding,] [packaging materials] [pallets,] as specified in [Waste Reduction Workplan] [Construction Waste Management Plan] in accordance with Section 01 74 19- Waste Management and Disposal.

1.5 Site Conditions

- 1.5.1 Ensure high ventilation rate, with maximum outside air, during installation.
 - 1.5.1.1 Vent directly to outside.
 - 1.5.1.2 Do not let contaminated air recirculate through a district or whole building air distribution system.
 - 1.5.1.3 Maintain extra ventilation for [1] month minimum after building occupation.

2. PRODUCTS

2.1 Resilient Tile Flooring Materials

- 2.1.1 Vinyl composition tile: to ASTM F1066, Composition 1 - non asbestos [Class 3 - surface patterned] [Class 1 - solid colour] [Class 2 - through pattern tile] , [plain] [embossed] , [3] [2] [1.5] mm, [300 x 300] mm size, in [standard] colour [as indicated] [as selected by Consultant from manufacturer's standard colour range.

2.1.2 Refer to Architectural drawings for specifications.

2.2 Accessories

2.2.1 Resilient base: continuous, top set, complete with premoulded end stops and external corners:

2.2.1.1 Type: [vinyl, 2.0 mm thick] [rubber, 3.0 mm thick] .

2.2.1.2 Style: [cove] [straight] .

2.2.1.3 Height: [101.6] mm.

2.2.1.4 Lengths: cut lengths minimum [2400] mm.

2.2.1.5 Colour: [as indicated] [as selected by Consultant] from manufacturer's standard colour range.

2.2.2 Primers and adhesives: of types recommended by resilient flooring manufacturer for specific material on applicable substrate, above, on or below grade.

2.2.2.1 Adhesives: VOC limit [60] [50] [150] g/L maximum to [SCAQMD Rule 1168] .

2.2.2.2 [Primer] : in accordance with manufacturer's recommendations for surface conditions:

2.2.2.2.1 VOC limit: [100] g/L maximum to [SCAQMD Rule 1113]

2.2.3 Sub-floor filler and leveller: [2 part latex-type filler requiring no water] [white premix latex requiring water only to produce cementitious paste] as recommended by flooring manufacturer for use with their product.

2.2.4 Metal edge strips: extruded aluminum, smooth, [mill finish] [polished] stainless steel with lip to extend under floor finish, shoulder flush with top of adjacent floor finish.

2.2.5 Sealer and wax: type recommended by resilient flooring material manufacturer for material type and location.

2.2.5.1 Coating: VOC limit [50] [100] g/L maximum to [SCAQMD Rule 1113] .

3. EXECUTION

3.1 Examination

3.1.1 Examine conditions, substrates and work to receive work of this Section, co-ordinate with Section [01 71 00- Examination and Preparation] .

3.1.2 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for product installation in accordance with manufacturer's written instructions.

3.1.2.1 Visually inspect substrate in presence of Consultant.

- 3.1.2.2 Inform Consultant of unacceptable conditions immediately upon discovery.
- 3.1.2.3 Proceed with installation only after unacceptable conditions have been remedied [and after receipt of written approval to proceed from Consultant.
- 3.1.3 Ensure concrete floors are clean and dry by using test methods recommended by flooring manufacturer.

3.2 Preparation

- 3.2.1 Prepare for installation in accordance with manufacturer's written recommendations.
- 3.2.2 Remove sub-floor ridges and bumps and fill low spots, cracks, joints, holes and other defects with sub-floor filler.
- 3.2.3 Clean floor and apply filler; trowel and float to leave smooth, flat hard surface.
 - 3.2.3.1 Prohibit traffic until filler is completely cured and dry.
- 3.2.4 Ensure existing vinyl flooring is removed by trained personnel.
- 3.2.5 Remove or treat existing adhesives to prevent residual bleeding through to new flooring or interfering with bonding of new adhesives.
- 3.2.6 [Seal] [concrete slab] [Prime] [plywood sub-floor] as recommended by resilient flooring manufacturer's written instructions.

3.3 Application: Flooring

- 3.3.1 Apply adhesive uniformly using recommended trowel. Do not spread more adhesive that can be covered by flooring before initial set takes place.
- 3.3.2 Resilient sheet flooring:
 - 3.3.2.1 Lay flooring [with seams parallel to building lines] to produce minimum number of seams.
 - 3.3.2.2 Border widths: 1/3 minimum width of full material.
- 3.3.3 [Double cut sheet joints] [and continuously seal] [Run sheets in direction of traffic.] [heat weld] according to manufacturer's written instructions.
- 3.3.4 Heat weld seams of linoleum sheet flooring in accordance with manufacturer's written instructions.
- 3.3.5 Resilient tile flooring:
 - 3.3.5.1 Lay flooring with joints parallel to building lines to produce symmetrical tile pattern.
 - 3.3.5.2 Border tiles: half tile width minimum.
 - 3.3.5.3 Install flooring [to square grid pattern with joints aligned] .

- 3.3.6 As installation progresses, [and after installation] roll flooring with [45] kg minimum roller to ensure full adhesion.
- 3.3.7 Cut flooring neatly around fixed objects.
- 3.3.8 Continue flooring over areas which will be under built-in furniture.
- 3.3.9 Continue flooring through areas to receive movable type partitions without interrupting floor pattern.
- 3.3.10 Terminate resilient flooring at centreline of door in openings where adjacent floor finish or colour is dissimilar.
- 3.3.11 Install metal edge strips at unprotected or exposed edges where flooring terminates.

3.4 Application: Base

- 3.4.1 Lay out base to keep number of joints at minimum.
- 3.4.2 Clean substrate and prime with one coat of adhesive.
- 3.4.3 Apply adhesive to back of base.
- 3.4.4 Set base against wall and floor surfaces tightly by using 3 kg hand roller.
- 3.4.5 Install straight and level to variation of 1:1000.
- 3.4.6 Scribe and fit to door frames and other obstructions. Use premoulded end pieces at flush door frames.
- 3.4.7 Cope internal corners using premoulded corner units for right angle external corners and formed straight base material for external corners of other angles.
- 3.4.8 Use toeless type base where floor finish will be carpet, coved type elsewhere.
- 3.4.9 Install toeless type base before installation of carpet on floors.

3.5 Cleaning

- 3.5.1 Progress Cleaning: clean in accordance with Section [01 74 00- Cleaning] .
 - 3.5.1.1 Leave Work area clean at end of each day.
- 3.5.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section [01 74 00- Cleaning] .
 - 3.5.2.1 Remove excess adhesive from floor, base and wall surfaces without damage.
 - 3.5.2.2 Clean, seal and wax floor and base surface to flooring manufacturer's printed instructions.

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3.5.3 Waste Management: separate waste materials for [recycling] [reuse] in accordance with Section [01 74 19- Waste Management and Disposal].

3.5.3.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.6 Protection

3.6.1 Protect installed products and components from damage during construction.

3.6.2 Protect new floors in accordance with manufacturer's printed instructions.

3.6.3 Repair damage to adjacent materials caused by resilient flooring installation.

END OF SECTION

1. GENERAL

1.1 Reference Standards

- 1.1.1 ASTM International
 - 1.1.1.1 ASTM F1066-[04(2010)e1] , Standard Specification for Vinyl Composition Floor Tile.
 - 1.1.1.2 ASTM F1344-[12e1] , Standard Specification for Rubber Floor Tile.
- 1.1.2 Canada Green Building Council (CaGBC)
- 1.1.3 Canadian General Standards Board (CGSB)
 - 1.1.3.1 CAN/CGSB-25.20-[95] , Surface Sealer for Floors.
 - 1.1.3.2 CAN/CGSB-25.21-[95] , Detergent-Resistant Floor Polish.
- 1.1.4 South Coast Air Quality Management District (SCAQMD)
 - 1.1.4.1 SCAQMD Rule 1168-[A2011] , Adhesive and Sealant Applications.

1.2 Action And Informational Submittals

- 1.2.1 Submit in accordance with Section [01 33 00- Submittal Procedures] .
- 1.2.2 Product Data:
 - 1.2.2.1 Submit manufacturer's instructions, printed product literature and data sheets for [resilient tile flooring] and include product characteristics, performance criteria, physical size, finish and limitations.
- 1.2.3 Samples:
 - 1.2.3.1 Submit duplicate tile in size specified, [feature strips,] [nosing,] [treads,] [edge strips] [base,] [[300] mm long] .

1.3 Maintenance Material Submittals

- 1.3.1 Extra Materials:
 - 1.3.1.1 Provide maintenance materials of resilient tile flooring, base and adhesive in accordance with Section [01 78 00- Closeout Submittals] .
 - 1.3.1.2 Extra materials from same production run as installed materials.
 - 1.3.1.3 Identify each container of floor tile and each container of adhesive.
 - 1.3.1.4 Deliver to Consultant, upon completion of the work of this section.
 - 1.3.1.5 Store where directed by Consultant .

1.4 Delivery, Storage And Handling

- 1.4.1 Deliver, store and handle materials in accordance with Section [with manufacturer's written instructions] [01 61 00- Common Product Requirements] .
- 1.4.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- 1.4.3 Storage and Handling Requirements:
 - 1.4.3.1 Store materials [in dry location] [indoors] [off ground] and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - 1.4.3.2 Store and protect [specified materials] from [nicks, scratches, and blemishes] .
 - 1.4.3.3 Replace defective or damaged materials with new.
- 1.4.4 Develop [Waste Reduction Workplan] [Construction Waste Management Plan] related to Work of this Section.
- 1.4.5 Packaging Waste Management: remove for reuse [and return] [by manufacturer] of [padding,] [crates,] [pallets,] [packaging materials] as specified in [Construction Waste Management Plan] [Waste Reduction Workplan] in accordance with Section [01 74 19- Waste Management and Disposal] .

1.5 Site Conditions

- 1.5.1 Ambient Conditions:
 - 1.5.1.1 Maintain air temperature and structural base temperature at flooring installation area above [20] degrees C for 48 hours before, during and for 48 hours after installation.

2. PRODUCTS

2.1 Materials

- 2.1.1 Vinyl composition tile: to ASTM F1066, Composition 1 - non asbestos [Class 3 - surface patterned] [Class 2 - through pattern tile] [Class 1 - solid colour] , [plain] [embossed,] [3] [2] [1.5] mm, [300 x 300] mm size, in [standard] colour [indicated] [selected by Consultant] .
- 2.1.2 High vinyl tile: to ASTM F1066, Composition 1 - non asbestos [1.5] [Class 1 - solid colour] [Class 2 - through pattern tile] [embossed,] [plain] [3] [Class 3 - surface patterned.,] [2] mm, [300 x 300] mm size, in [standard] colour [indicated] [selected by Consultant] .
- 2.1.3 Rubber tile: to ASTM F1344, [smooth] [moulded pattern,] [Class 2 - Laminated wear layer, [mottled wear layer,] [A-solid colour wear layer]] [Class 1 - Homogeneous rubber tile, [B-through pattern] [A-

- solid colour]] surface design, [] mm size, in [905 x 905] colour [standard] .[indicated] [selected by Consultant]
- 2.1.4 Linoleum tile flooring: composed of natural ingredients which are mixed and calendered onto a jute backing:
- 2.1.4.1 Pattern: [solid, uni-coloured] [marbleized] .
- 2.1.4.2 Thickness: [3.2] [2.0] [2.5] mm.
- 2.1.4.3 Colour: [indicated] [selected by Consultant].
- 2.1.5 Cork tile flooring: composed of agglomerated cork granules bound together with resins, baked in a mould and then sliced, rested, split and sanded on all surfaces.
- 2.1.5.1 Colour: as indicated on drawing.
- 2.1.5.2 Texture: as indicated on drawing.
- 2.1.5.3 Weight/Density: as indicated on drawing.
- 2.1.5.4 Tile Dimensions: as indicated on drawing.
- 2.1.6 Finish:
- 2.1.6.1 Factory prefinished.
- 2.1.6.2 Applied on-site as indicated:
- 2.1.6.2.1 [polyurethane] [Four coats] .
- 2.1.6.2.2 Apply [polyurethane] at a coverage of not less than [5 m²per litre] .
- 2.1.6.2.3 Check for obvious limps, bugs, dust etc.
- 2.1.6.2.4 When dry sand lightly, using [120] grit paper to ensure adhesion of subsequent application of finish.
- 2.1.6.2.5 Vacuum thoroughly.
- 2.1.6.2.6 Apply additional finish coatings as required.
- 2.1.6.2.7 Allow [24] hours for the finish to dry before permitting foot traffic and [7] days for the finish to cure before placing furniture and other heavy objects.
- 2.1.7 Feature strips: of same material and thickness as adjacent work [] .[]
- 2.1.8 Resilient base: to [vinyl] [rubber,] [coved,] [straight] minimum [1200] mm length.
- 2.1.9 Linoleum base: continuous, top set, [complete with premoulded end stops and external corners] .
- 2.1.9.1 Thickness: [2.5] [3.2] [2.0] mm.
- 2.1.9.2 Height: 100 mm.
- 2.1.9.3 Lengths: 2400 mm.

- 2.1.9.4 Colour: [indicated] [to match flooring] .
- 2.1.10 Resilient stair nosing: [round] [square] nose, [5] mm thick, [30] mm vertical face, [40] mm horizontal face ribbed, [overlay type] [rebated type to receive tread finish] [rubber] [one-piece length for stair nosing] [vinyl] , of [] .[indicated] [selected by Consultant].
- 2.1.11 Resilient stair tread: [rubber,] [30] mm vertical face, [square] nose, full tread deep, [] surface [ribbed] pattern, of [solid] .
- 2.1.12 Resilient stair riser: top set [rubber] [vinyl] , [3.2] [2.0] mm thick, [full riser height], [solid] pattern, of .
- 2.1.13 Resilient stair stringer: [rubber,] [solid] pattern, of .[indicated] [selected by Consultant].
- 2.1.14 Primers and adhesives: [waterproof,] recommended by flooring manufacturer for specific material on applicable substrate, above, at or below grade.
 - 2.1.14.1 Flooring adhesives:
 - 2.1.14.1.1 Adhesive: maximum VOC limit [60] [50] g/L [to SCAQMD Rule 1168] .
 - 2.1.14.2 Cove base adhesives:
 - 2.1.14.2.1 Adhesive: maximum VOC limit [50] g/L [to SCAQMD Rule 1168] .
- 2.1.15 Sub-floor filler and leveller: [white premix latex requiring water only to produce cementitious paste] [2 part latex-type filler requiring no water] as recommended by flooring manufacturer for use with their product.
- 2.1.16 Metal edge strips: aluminum extruded, smooth, [polished with lip to extend under floor finish, shoulder flush with top of adjacent floor finish].
- 2.1.17 Sealer: [type recommended by flooring manufacturer] [to CAN/CGSB-25.20, Type 2-water based] .
- 2.1.18 Wax: [to CAN/CGSB-25.21] [type recommended by flooring manufacturer] .

3. **EXECUTION**

3.1 **Examination**

- 3.1.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for resilient tile flooring installation in accordance with manufacturer's written instructions.
 - 3.1.1.1 Visually inspect substrate in presence of Consultant.
 - 3.1.1.2 Inform Consultant of unacceptable conditions immediately upon discovery.

- 3.1.1.3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed Consultant.

3.2 Inspection

- 3.2.1 Ensure concrete floors are dry, by using test methods recommended by tile manufacturer.

3.3 Sub-Floor Treatment

- 3.3.1 Remove existing resilient flooring.
- 3.3.2 Remove or treat old adhesives to prevent residual, old flooring adhesives from bleeding through to new flooring and/or interfering with the bonding of new adhesives.
- 3.3.3 Clean floor and apply filler; trowel and float to leave smooth, flat hard surface. Prohibit traffic until filler cured and dry.
- 3.3.4 Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes and other defects with sub-floor filler.
- 3.3.5 [Seal] [Prime] [concrete] [plywood sub-floor] to flooring manufacturer's printed instructions.

3.4 Tile Application

- 3.4.1 Provide high ventilation rate, with maximum outside air, during installation, and for [48] to [72] hours after installation. If possible, vent directly to outside. Do not let contaminated air recirculate through district or whole building air distribution system. Maintain extra ventilation for at least one month following building occupation.
- 3.4.2 Apply adhesive uniformly using recommended trowel in accordance with flooring manufacturer's instructions. Do not spread more adhesive than can be covered by flooring before initial set takes place.
- 3.4.3 Lay flooring with joints parallel to building lines to produce symmetrical tile pattern. Border tiles minimum half tile width.
- 3.4.4 Install flooring [to ashlar/staggered pattern with continuous joints flowing with direction of mottle] [with pattern grain alternating to produce basket weave pattern] [to square grid pattern with joints aligned] [with pattern grain parallel for units and parallel to [width] [length] of room] .
- 3.4.5 As installation progresses, [and after installation] , roll flooring in 2 directions [[including] [except] resilient tile] with [45] kg minimum roller to ensure full adhesion.
- 3.4.6 Cut tile and fit neatly around fixed objects.

- 3.4.7 Install feature strips and floor markings where indicated. Fit joints tightly.
- 3.4.8 Install flooring in pan type floor access covers. Maintain floor pattern.
- 3.4.9 Continue flooring through areas to receive movable type partitions without interrupting floor pattern.
- 3.4.10 Terminate flooring at centerline of door in openings where adjacent floor finish or colour is dissimilar.
- 3.4.11 Install metal edge strips at unprotected or exposed edges where flooring terminates.

3.5 Stair Application

(If specified on Architectural drawings)

- 3.5.1 Finish [stair risers] [stair stringers] with [resilient tile] and install prior to tread material.
- 3.5.2 Install [stair risers] [stair nosings] [stair treads] one piece for full width of stair. Adhere over entire surface and fit accurately.

3.6 Base Application

- 3.6.1 Lay out base to keep number of joints at minimum. Base joints at maximum length available or at internal or premoulded corners.
- 3.6.2 Clean substrate and prime with one coat of adhesive.
- 3.6.3 Apply adhesive to back of base.
- 3.6.4 Set base against wall and floor surfaces tightly by using 3 kg hand roller.
- 3.6.5 Install straight and level to variation of 1:1000.
- 3.6.6 Scribe and fit to door frames and other obstructions. Use premoulded end pieces at flush door frames.
- 3.6.7 Cope internal corners. Use premoulded corner units for right angle external corners. Use formed straight base material for external corners of other angles, minimum [300] mm each leg. Wrap around toeless base at external corners.
- 3.6.8 Install toeless type base before installation of carpet on floors.

3.7 Cleaning

- 3.7.1 Progress Cleaning: clean in accordance with Section [01 74 11- Cleaning] .
 - 3.7.1.1 Leave Work area clean at end of each day.
- 3.7.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section [01 74 11- Cleaning] .

3.7.2.1 Clean flooring [base] surfaces to flooring manufacturer's printed instructions.

3.7.3 Remove excess adhesive from floor, base and wall surfaces without damage.

3.7.4 Clean, seal and wax floor and base surface to flooring manufacturer's instructions. In carpeted areas clean, seal and wax base surface before carpet installation.

3.7.5 Waste Management: separate waste materials for [reuse] [recycling] in accordance with Section [01 74 19- Waste Management and Disposal].

3.7.5.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.8 Protection

3.8.1 Protect new floors from [after initial waxing] [time of final set of adhesive] until [final inspection] [final waxing] .

3.8.2 Prohibit traffic on floor for [48] hours after installation.

3.8.3 Use only water-based coating for linoleum.

END OF SECTION

1. GENERAL

1.1 Reference Standards

- 1.1.1 American Association of Textile Chemists and Colorists (AATCC)
 - 1.1.1.1 AATCC Test Method 16.1-[2012(R2014)] , Colorfastness to Light: Outdoor.
 - 1.1.1.2 AATCC Test Method 16.2-[2012(R2014)] , Colorfastness to Light: Carbon-Arc.
 - 1.1.1.3 AATCC Test Method 16.3-[2012(R2014)] , Colorfastness to Light: Xenon-Arc
 - 1.1.1.4 AATCC Test Method 23-[2010(R2015)] , Colorfastness to Burn Gas Fumes.
 - 1.1.1.5 AATCC Test Method 129-[2010(R20156)] , Colorfastness to Ozone in the Atmosphere Under High Humidities.
 - 1.1.1.6 AATCC Test Method 134-[2013(2016)] , Electrostatic Propensity of Carpets.
 - 1.1.1.7 AATCC Test Method 171-[2014] , Carpets: Cleaning of; Hot Water Extraction Method .
 - 1.1.1.8 AATCC Test Method 175-[2013] , Stain Resistance: Pile Floor Coverings.
 - 1.1.1.9 AATCC Test Method 189-[2012] , Fluorine Content of Carpet Fibers.
- 1.1.2 ASTM International (ASTM)
 - 1.1.2.1 ASTM D297-[15] , Standard Test Methods for Rubber Products-Chemical Analysis.
 - 1.1.2.2 ASTM D1335-[12] , Standard Test Method for Tuft Bind of Pile Yarn Floor Coverings.
 - 1.1.2.3 ASTM D 1667-[05(R2011)] , Standard Specification for Flexible Cellular Materials-Poly (Vinyl Chloride) Foam (Closed-Cell).
 - 1.1.2.4 ASTM D2661-[14] , Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Schedule 40 Plastic Drain, Waste, and Vent Pipe and Fittings.
 - 1.1.2.5 ASTM D3574-[11] , Standard Test Methods for Flexible Cellular Materials - Slab, Bonded, and Molded Urethane Foams.
 - 1.1.2.6 ASTM D3936-[12] , Standard Test Method for Resistance to Delamination of the Secondary Backing of Pile Yarn Floor Covering.
 - 1.1.2.7 ASTM D 5116-[10] , Standard Guide for Small-Scale Environmental Chamber Determinations of Organic Emissions From Indoor Materials/Products.
- 1.1.3 Canada Green Building Council (CaGBC)

- 1.1.4 Canadian General Standards Board (CGSB)
 - 1.1.4.1 CAN/CGSB-4.2 No. 22-2004[(2013)] , Textile Test Methods - Colourfastness to Rubbing (Crocking).
 - 1.1.4.2 CAN/CGSB-4.2 No.27.6-M91-[(R2013)] , Textile Test Methods - Flame Resistance - Methemine Tablet Test for Textile Floor Coverings.
 - 1.1.4.3 CAN/CGSB-4.2 No. 76-94/ISO 2551: 1981 IDT [(R2013)] , Textile Test Methods - Machine-Made Textile Floor Coverings - Determination of Dimensional Changes Due to the Effects of Varied Water and Heat Conditions.
 - 1.1.4.4 CAN/CGSB-4.2 No.77.1-94/ISO 4919: 1978 [(R2012)] , Textile Test Methods - Carpets - Determination of Tuft Withdrawal Force.
- 1.1.5 Carpet and Rug Institute (CRI)
 - 1.1.5.1 CRI 104 Standard for Installation of Commercial Carpet [2015] .
 - 1.1.5.2 CRI Green Label Plus Indoor Air Quality Testing Program.
- 1.1.6 Environmental Choice Program (ECP)
 - 1.1.6.1 CCD-152- [2009] , Flooring Products, Commercial Non-modular Textile Flooring.
- 1.1.7 Health Canada
 - 1.1.7.1 C.R.C., c.923-[10] , Hazardous Products Act - Carpet Regulations, Part II of Schedule 1.
- 1.1.8 National Floor Covering Association (NFCA)
 - 1.1.8.1 National Floor Covering Specification Manual [2007] .
- 1.1.9 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
 - 1.1.9.1 SCAQMD Rule 1113-[A2016] , Architectural Coatings.
 - 1.1.9.2 SCAQMD Rule 1168-[A2005] , Adhesives and Sealants Applications.
- 1.1.10 ULC Standards(ULC)
 - 1.1.10.1 CAN/ULC-S102-[11] , Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
 - 1.1.10.2 CAN/ULC-S102.2-[88] , Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings and Miscellaneous Materials and Assemblies.

1.2 **Administrative Requirements**

- 1.2.1 Pre-Installation Meetings:

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- 1.2.1.1 Convene pre-installation meeting [1] week prior to beginning [on-site installation] , with Consultant in accordance with Section [01 31 19- Project Meetings] to:
 - 1.2.1.1.1 Verify project requirements.
 - 1.2.1.1.2 Review installation and substrate conditions.
 - 1.2.1.1.3 Co-ordination with other construction subtrades.
 - 1.2.1.1.4 Review [manufacturer's] written installation instructions and warranty requirements.

1.3 Action And Informational Submittals

- 1.3.1 Submit in accordance with Section [01 33 00- Submittal Procedures] .
- 1.3.2 Product Data:
 - 1.3.2.1 Submit manufacturer's instructions, printed product literature and data sheets for each [subfloor patching compound] [carpet tile] [adhesive] and include product characteristics, performance criteria, physical size, finish and limitations.
 - 1.3.2.2 Submit [2] copies of WHMIS MSDS in accordance with Section [01 35 29.06- Health and Safety Requirements] [01 35 43- Environmental Procedures] .
- 1.3.3 Shop Drawings:
 - 1.3.3.1 Submit drawings stamped and signed by professional engineer registered or licensed in Ontario, Canada.
 - 1.3.3.2 Information on shop drawings to indicate:
 - 1.3.3.2.1 Nap: direction, open edges, special patterns.
 - 1.3.3.2.2 Cutouts: show locations where cutouts are required.
 - 1.3.3.2.3 Edgings: show location of edge moldings and edge bindings.
- 1.3.4 Samples:
 - 1.3.4.1 Submit [2] samples for review and acceptance of each accessory.
 - 1.3.4.2 Submit [2] samples of each type of carpet tile specified and duplicate tiles for each colour selected, [divider strips] [base] [[150] mm length binder bars] .
 - 1.3.4.3 Samples returned for inclusion into work.
- 1.3.5 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

- 1.3.6 Test and Evaluation Reports:
 - 1.3.6.1 Certified test reports showing compliance with specified performance characteristics and physical properties.
- 1.3.7 Manufacturer's Instructions: submit manufacturer's installation [storage] instructions.
- 1.3.8 Manufacturers Reports:
 - 1.3.8.1 Manufacturer's Field Reports: submit manufacturer's written reports within [3] days of review, verifying compliance with specifications.
- 1.3.9 Qualification Statements:
 - 1.3.9.1 Compliance: to [CAN/ULC-S102] [CAN/ULC-S102.2] .
 - 1.3.9.2 Testing: passes Green Label Plus Indoor Air Quality Testing Program.
 - 1.3.9.3 Tuft bind: meets requirements of [CAN/CGSB-4.129] when tested to [CAN/CGSB-4.2 No.77.1] .

1.4 Closeout Submittals

- 1.4.1 Submit in accordance with Section [01 78 00- Closeout Submittals] .
- 1.4.2 Operation and Maintenance Data: submit operation and maintenance data for [installed products] for incorporation into manual.
- 1.4.3 Warranty Documentation: submit warranty documents specified.
- 1.4.4 Carpet Reclamation:
 - 1.4.4.1 Co-ordinate carpet reclamation in accordance with Section [01 74 19. 13- Carpet Reclamation] .
 - 1.4.4.2 Schedule of carpet reclamation activities indicating following:
 - 1.4.4.2.1 Detailed sequence of removal work.
 - 1.4.4.2.2 Inventory of items to be removed and reclaimed.
 - 1.4.4.2.3 Proposed packing and transportation measures.
 - 1.4.4.3 Reclamation agencies' records indicating receipt and disposition of used carpet.
 - 1.4.4.4 Certification: Reclamation Agency to verify in writing used carpet removed and recycled in accordance with [carpet] manufacturers' reclamation program.
 - 1.4.4.4.1 Record off-site removal of debris and materials and provide following information regarding removed materials.
 - (1) Time and date of removal.
 - (2) Type of material.

- (3) Weight and quantity of materials.
- (4) Final destination of materials.

1.5 Maintenance Material Submittals

1.5.1 Extra stock materials

1.5.1.1 Quantity:

- 1.5.1.1.1 Carpet tile: as indicated on drawing.
- 1.5.1.1.2 Carpet base: as indicated on drawing.
- 1.5.1.1.3 Adhesives: as indicated on drawing.

1.5.1.2 Delivery, storage and protection: comply with Owner's requirements for delivery and storage of extra materials. Protect as follows:

1.6 Quality Assurance

1.6.1 Quality Assurance: in accordance with Section [01 45 00- Quality Control] .

1.6.2 Regulatory Requirements:

1.6.2.1 Prequalification: [compliance with Health Canada regulations under "Hazardous Products Act", Part II of Schedule 1,] [to CAN/CGSB-4.2 No. 27.6] .

1.6.3 Qualifications:

1.6.3.1 Manufacturer: capable of providing field service representation during construction and approving application method.

1.6.3.2 Supplier: Refer to Floor Finishes Drawing.

1.6.3.3 Flooring [Contractor] [Applicator] [Installer] :

- 1.6.3.3.1 Experienced in performing work of this Section who has specialized in installation of work similar to that required for this project.
- 1.6.3.3.2 Certified by carpet manufacturer prior to [bid] [tender] submission.
- 1.6.3.3.3 No sub-contract labour without written approval of Consultant.
- 1.6.3.3.4 Responsible for proper product installation, including floor testing and preparation as specified and in accordance with carpet manufacturer's written instructions.

1.7 Delivery, Storage And Handling

- 1.7.1 Deliver, store and handle materials in accordance with Section [with manufacturer's written instructions] [01 61 00- Common Product Requirements] .
- 1.7.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- 1.7.3 Storage and Handling Requirements:
 - 1.7.3.1 Store materials [indoors] [in dry location] and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - 1.7.3.2 Store materials protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
 - 1.7.3.3 Store and protect [adhesive] [carpet tile] in original containers or wrapping with manufacturer's seals and labels intact.
 - 1.7.3.4 Store and protect carpet tile and accessories in location as directed by Consultant.
 - 1.7.3.5 Store carpet and adhesive at minimum temperature of 18 degrees C and relative humidity of maximum 65% for minimum of 48 hours before installation.
 - 1.7.3.6 Prevent damage to materials during handling and storage. Keep materials under cover and free from dampness.
 - 1.7.3.7 Safety: comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials.
 - 1.7.3.8 Replace defective or damaged materials with new.
- 1.7.4 Develop [Waste Reduction Workplan] [Construction Waste Management Plan] related to Work of this Section.
- 1.7.5 Packaging Waste Management: remove for reuse [and return] [by manufacturer] of [packaging materials] [crates,] [padding,] [pallets,] as specified in [Construction Waste Management Plan] [Waste Reduction Workplan] in accordance with Section [01 74 19- Waste Management and Disposal] .

1.8 Site Conditions

- 1.8.1 Moisture: substrate within moisture limits and alkalinity limits recommended by manufacturer. Prepare moisture testing and provide report to Consultant.
- 1.8.2 Temperature: maintain ambient temperature of minimum [18] degrees C from [48] hours before installation to minimum 48 hours after completion of work.

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- 1.8.3 Relative humidity: maintain between 10% and 65% for 48 hours before, during and 48 hours after installation.
- 1.8.4 Ventilation:
 - 1.8.4.1 General Contractor will co-ordinate operation of ventilation system during installation of carpet.] [Ventilate area of work as directed by Consultant by use of approved portable supply and exhaust fans.]
 - 1.8.4.2 Ventilate enclosed spaces in accordance with Section [01 51 00- Temporary Utilities] . [Provide fans with HEPA filters.]
 - 1.8.4.3 Provide continuous ventilation during and after carpet application. Run ventilation system [24 hours per day] during installation; provide continuous ventilation for [7] days after completion of carpet installation.
- 1.8.5 Install carpet after:
 - 1.8.5.1 Space enclosed and weatherproof.
 - 1.8.5.2 Wet-work in space completed and nominally dry.
 - 1.8.5.3 Work above ceilings complete.

1.9 Warranty

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

2. PRODUCTS

2.1 Materials

- 2.1.1 Manufacturers: to match existing.
 - 2.1.1.1 Ensure manufacturer has minimum [5] years experience in manufacturing components similar to or exceeding requirements of project.
- 2.1.2 Description:
 - 2.1.2.1 Adhesives: Maximum VOC limit [150] [50] g/L to [SCAQMD Rule 1168] [GS-36] .
 - 2.1.2.2 [Sealer] [Primer] : in accordance with manufacturer's recommendations for surface conditions:
 - 2.1.2.2.1 VOC limit: maximum [100] g/L to [SCAQMD Rule 1113]
 - 2.1.2.3 Carpet and Accessories:
 - 2.1.2.3.1 Green Label Plus certified.

2.2 Performance

- 2.2.1 Flammability: certified for flammability to Health Canada regulations under "Hazardous Products - Carpet Regulations", Part II of Schedule 1.
- 2.2.2 Flame Spread: maximum flame spread rating [300] , maximum smoke developed classification [500] , [when tested to [CAN/ULC-S102.2]] .
- 2.2.3 Smoke Development: Maximum 450 to [ASTM E662] .
- 2.2.4 Dry Breaking Strength: to [ASTM D2661] , minimum acceptable tear strength in both length and width:
 - 2.2.4.1 [11.3] kg for carpets installed by glue down installation.
- 2.2.5 Wear: maximum [10] % loss of pile face fibre by weight for [10] years.
- 2.2.6 Edge Ravel: none for [10] years.
- 2.2.7 Static Resistance: permanent static control to [AATCC 134] , [3000 V maximum] at 20% RH and 22 degrees C.
- 2.2.8 Static Generation: less than [3.0] kV per [AATCC 134] for [10] years.
- 2.2.9 Tuft Bind: Tuft Lock: to [CAN/CGSB-4.129] [ASTM D1335] , minimum acceptable [[1.6] kilograms for cut pile product] [[3.6] for loop pile product] .
- 2.2.10 De-lamination of Secondary Backing: Lamination Strength of Secondary Backing: to [ASTM D3936] , minimum acceptable peel strength of [1.6] kg/25 mm.
- 2.2.11 Stain resistance: to [AATCC 175] , [8] .
- 2.2.12 Soil Resistance: [Fluorine Durability Level to AATCC 189] [[_____] 350</options >ppm fluorine minimum] .
- 2.2.13 Colorfastness, dimensional stability, permanency of finishes, and ease of cleaning: to [AATCC 171] .
- 2.2.14 Colourfastness to light: to [CAN/CGSB-4.2 No.18.3] [AATCC 16] .
- 2.2.15 Colourfastness to atmosphere: to [AATCC 129] [AATCC 23] .
- 2.2.16 Colourfastness to crocking: to [CAN/CGSB-4.2 No. 22] .
- 2.2.17 Cleaning of Carpets with Hot Water Extraction Method : to AATCC 171.
- 2.2.18 Indoor Air Quality Certification: certified to CRI Green Label [Plus] IAQ requirements.

2.3 Fabrication

- 2.3.1 Face construction:
 - 2.3.1.1 [Tufted] [Needle punched] [Woven].
- 2.3.2 Pile Surface Appearance:

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- 2.3.2.1 Level loop: [non-textured] [textured] .
- 2.3.2.2 Multi-level loop: [concealed-pile] [sculptured] .
- 2.3.2.3 Cut and loop: [Saxony] [plush] .
- 2.3.2.4 Cut pile: [plain Saxony] [plain plush] .
- 2.3.3 Pile fibre: to [CAN/CGSB-4.129] .
 - 2.3.3.1 Nylon: [staple] [BCF] .
 - 2.3.3.1.1 2.3.3.1 Type: [Nylon 6.6] [Nylon 6] .
 - 2.3.3.2 Face Fiber Content:
 - 2.3.3.3 Face Fiber Denier: minimum [18] .
 - 2.3.3.4 Dyeing Method: [printed] [stock] [solution dyed] [piece] [yarn] .
 - 2.3.3.5 Tufted Carpet Backing: to [CAN/CGSB-4.129] .
 - 2.3.3.6 Primary backing:
 - 2.3.3.6.1 2.3.7.1 Polypropylene: [Cut Pile Carpet: 100% [woven] [spunbonded] [126 g/m2]] .
 - 2.3.3.6.2 2.3.7.2 Polypropylene: [Loop Pile Carpet: 100% [woven] [spunbonded] [109 g/m2]] .
 - 2.3.3.6.3 2.3.7.3 Polyester: []
- 2.3.4 Woven Carpet Backing: to [CAN/CGSB-4.129] .
 - 2.3.4.1 100% moisture resistant warp, filling and stuffer yarns.
- 2.3.5 Secondary and Unitary Backings: to [CAN/CGSB-4.129] .
- 2.3.6 Mill Width: []
- 2.3.7 Stitches: []
- 2.3.8 Gauge: []
- 2.3.9 Pile Weight Density: []
- 2.3.10 Finished Pile Height: minimum [0.5] mm average.
- 2.3.11 Surface Pile Weight: minimum [474 g] .
- 2.3.12 Performance Rating: [3.0] minimum at [22,000 cycles to Vetterman test] [12,000 cycles to Hexapod test] .
- 2.3.13 Total Weight: []
- 2.3.14 Dimensional Stability: maximum [+ 0.15%] to [CAN/CGSB-4.2 No. 76/ISO 2551] .

2.4 Tile Cushion Backing

- 2.4.1 Density: urethane [224] kg/m kg/m³to ASTM D3574.
- 2.4.2 Compression force deflection, minimum: urethane [34.5] kN/m²to ASTM D3574.

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- 2.4.3 Compression deflection, minimum: EVA and PVC [48.3] kN/m² to ASTM D1667.
- 2.4.4 Compression set at 50%, maximum: urethane [15%] to ASTM D3574.
- 2.4.5 Compression set at 25%, maximum: EVA and PVC [10%] to ASTM D3574.
- 2.4.6 Ash content, maximum: urethane [50%] ; EVA and PVC [50%] to ASTM D297.
- 2.4.7 Anti-microbial Resistance: to [AATCC 174] , [2] mm minimum halo of inhibition for gram positive bacteria.
 - 2.4.7.1 [1] mm minimum halo of inhibition for gram negative bacteria.
 - 2.4.7.2 Ensure no fungal growth.

2.5 Accessories

- 2.5.1 Base: []
 - 2.5.1.1 Carpet Base: [] .[Bound exposed edge.] [[]
[Metal] [Vinyl] cap strip to accommodate carpet base
thickness, colour to match carpet]
 - 2.5.1.2 Wall Carpet Base: [cove] [toeless] .
 - 2.5.1.3 Resilient Base: []
- 2.5.2 Binder Bars: As per Floor Finishes Drawings.
- 2.5.3 Edge Strips:
 - 2.5.3.1 Metal:
 - 2.5.3.1.1 [Clamp down type] [Hammered surface
aluminum] [Pinless] [Designed for carpet
being installed] .
 - 2.5.3.1.2 Floor flange minimum [38] mm wide, face
minimum [16] mm wide.
 - 2.5.3.1.3 Finish: [clear anodic coating] .
 - 2.5.3.2 [Vinyl] [Rubber] :
 - 2.5.3.2.1 Beveled floor flange minimum [50] mm
wide.
 - 2.5.3.2.2 Beveled surface to finish flush with carpet
tile for tight joint and other side to floor
finish.
 - 2.5.3.2.3 Colour: Refer to floor finishes drawings
- 2.5.3.3 Carpet Base Top Edge Strip:
 - 2.5.3.3.1 Vinyl "J" strip wall flange minimum [38] mm
wide with cap beveled from wall to finish
flush with carpet being installed.
 - 2.5.3.3.2 Colour: Refer to floor finishes drawings

- 2.5.4 Adhesive:
 - 2.5.4.1 Multi-purpose Adhesive Type: [recommended by carpet tile manufacturer for direct glue down installation] .
 - 2.5.4.2 Pressure Sensitive Type: [recommended by carpet tile manufacturer for direct glue down installation of speciality backed carpet tiles] .
 - 2.5.4.3 Mill-applied Adhesive Type: fully cured. Combination of pre-applied adhesive and tile to meet carpet only VOC emissions criteria of Carpet and Rug Institute Green Label Plus Indoor Air Quality Certification Program.
 - 2.5.4.4 Pre-applied Adhesive: non-transferable.
 - 2.5.4.5 On site application VOC limit: [150] [50] g/L maximum to [SCAQMD Rule 1168] .
 - 2.5.4.6 Adhesive in compliance with [CCD-152] .
- 2.5.5 Transition Mouldings:
 - 2.5.5.1 Carpet edge / reducer strip: [_____]
- 2.5.6 Stair nosing:
- 2.5.7 Carpet protection: [non-staining heavy duty kraft paper] .
- 2.5.8 Concrete floor [sealer] [primer] :
 - 2.5.8.1 VOC limit: [100] g/L maximum to [SCAQMD Rule 1113] .
- 2.5.9 Subfloor patching compound: Portland cement base filler, mix with [water] [latex] to form cementitious paste.

3. **EXECUTION**

3.1 **Installers**

- 3.1.1 Experienced and qualified technicians to carry out assembly and installation of tile carpet.

3.2 **Examination**

- 3.2.1 Examine conditions, substrates and work to receive work of this Section, co-ordinate with Section [01 71 00- Examination and Preparation] .
- 3.2.2 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts acceptable for carpet tile installation in accordance with manufacturer's written instructions.
 - 3.2.2.1 Inform Consultant of unacceptable conditions immediately upon discovery.
 - 3.2.2.2 Proceed with installation only after unacceptable conditions remedied [and after receipt of written approval to proceed from Consultant] .

3.3 Preparation

3.3.1 Demolition / Removal:

- 3.3.1.1 Remove and [return] [divert] carpet for [reclamation] [recycling] [reuse] in accordance with Section [01 74 19.13- Carpet Reclamation] [01 74 19- Waste Management and Disposal] and with Waste Reduction Workplan. Co-ordinate with Consultant.
- 3.3.1.2 Vacuum used carpet before removal.
- 3.3.1.3 Maintain possession of removed used carpet.
- 3.3.1.4 Remove used tiles and pack in [pallets] [container] [trailer] . Use effective packing techniques to maximize amount of material in container.
- 3.3.1.5 Sort only clean, dry carpet tiles for reclamation. Clean is defined as carpet free from demolition debris, asbestos contamination, garbage, knife blades and tack strips.
- 3.3.1.6 Carpet undercushion: provide recycling of carpet padding where locally available or as designated by carpet reclamation program.

3.3.2 Subfloor Preparation:

- 3.3.2.1 Inspect concrete and determine special care required to make it a suitable for carpet installation.
- 3.3.2.2 Fill and level cracks [3] mm wide or protrusions over [0.8] mm with appropriate and compatible [latex] [polymer fortified] patching compound.
- 3.3.2.3 Comply with manufacturer's written recommendations for maximum patch thickness.
- 3.3.2.4 Prime large patch areas with compatible primer.
- 3.3.2.5 Ensure concrete substrates cured, clean and dry.
- 3.3.2.6 Ensure concrete substrates free of paint, dirt, grease, oil, curing or parting agents, and other contaminants, including sealers, that interfere with bonding of adhesive.
- 3.3.2.7 Where powdery or porous concrete surface encountered, apply primer compatible with adhesive to provide suitable surface for glue-down installation.

3.3.3 Surface Preparation: prepare surface in accordance with manufacturer's written recommendations and co-ordinate with Section [01 71 00- Examination and Preparation] .

- 3.3.3.1 Prepare floor surfaces in accordance with CRI Carpet Installation Standard.

3.3.4 Tile Carpeting Preparation:

- 3.3.4.1 Pre-condition carpeting [following manufacturer's written instructions] .

3.4 Installation

- 3.4.1 Install carpet tiles in accordance with manufacturer's written instructions, and CRI Carpet Installation Standard and co-ordinate with Section [01 73 00- Execution] .
- 3.4.2 Co-ordinate tile carpeting work with work of other trades, for proper time and sequence to avoid construction delays.
- 3.4.3 Install carpet tile after finishing work is completed but before demountable office partitions and telephone and electrical pedestal outlets installed.
- 3.4.4 Install carpet tile in accordance with manufacturer's recommendation. This can include quarter-turn 90 degree format, monolithic, random, quarter turn ashlar, horizontal, herringbone or vertical ashlar.
- 3.4.5 Snugly join carpet tiles in completed installation.
 - 3.4.5.1 Measure distance covered by 11 carpet tiles (10 joints) and ensure distance is compliance with manufacturer specifications.
 - 3.4.5.2 Trapping yarn between carpet tiles is prohibited.
- 3.4.6 Apply thin film of pressure-sensitive adhesive according to manufacturer's recommendations.
- 3.4.7 Finished installation to present smooth wearing surface free from conspicuous seams, burring and other faults.
- 3.4.8 Use material from same dye lot.
 - 3.4.8.1 Colour, pattern and texture to match within visual areas.
 - 3.4.8.2 Maintain constant pile direction.
- 3.4.9 Fit around architectural, mechanical, electrical and telephone outlets, and furniture fitments, around perimeter of rooms into recesses, and around projections.
- 3.4.10 Install carpet tiles to underfloor duct system access covers.
- 3.4.11 Install carpeting in pan type floor access covers.
- 3.4.12 Extend carpet tiles into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
- 3.4.13 Install carpet tiles smooth and free from bubbles, puckers, and other defects.
- 3.4.14 Protect exposed carpet tile edges at transition to other flooring materials with suitable transition strips.

3.5 Site Quality Control

- 3.5.1 Site Tests and Inspections:

3.5.1.1 Co-ordinate site test with Section [01 45 00- Quality Control] .

3.5.2 Manufacturer's Field Services:

3.5.2.1 Co-ordinate manufacturer's services with Section [01 45 00- Quality Control] . Have manufacturer review work involved in handling, installation / application, protection and cleaning of its product[s] , and submit written reports, in acceptable format, to verify compliance of work with Contract.

3.5.2.2 Manufacturer's field services: provide manufacturer's field services, consisting of product use recommendations and periodic site visits for inspection of product installation, in accordance with manufacturer's instructions.

3.5.2.3 Schedule site visits:

3.5.2.3.1 After delivery and storage of products, and when preparatory Work, or other Work, on which Work of this Section depends, complete but before installation begins.

3.5.2.3.2 [Twice] during progress of Work at [25%] and [60%] complete.

3.5.2.3.3 Upon completion of Work, after cleaning carried out.

3.5.2.4 Obtain reports within [3] days of review and submit immediately to Consultant.

3.6 Cleaning

3.6.1 Progress Cleaning: clean in accordance with Section [01 74 00- Cleaning] .

3.6.1.1 Leave Work area clean at end of each day.

3.6.1.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section [01 74 00- Cleaning].

3.6.1.2.1 Vacuum carpets clean immediately after completion of installation.

3.6.2 Waste Management: separate waste materials for [reuse] [recycling] in accordance with Section [01 74 19- Waste Management and Disposal] [01 74 19.13- Carpet Reclamation] .

3.6.2.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.7 Protection

3.7.1 Protect installed products and components from damage during construction.

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- 3.7.2 Prohibit traffic on carpet for minimum period of [24] hours after installation and until adhesive is cured.
- 3.7.3 Install carpet protection as directed by Consultant.
- 3.7.4 Repair damage to adjacent materials caused by tile carpeting installation.

END OF SECTION

1. GENERAL

1.1 Reference Standards

- 1.1.1 Canada Green Building Council (CaGBC)
- 1.1.2 Environmental Protection Agency (EPA)
 - 1.1.2.1 Test Method for Measuring Total Volatile Organic Compound Content of Consumer Products, EPA Method 24 - Surface Coatings.
 - 1.1.2.2 SW-846, Test Methods for Evaluating Solid Waste: Physical/Chemical Methods.
- 1.1.3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - 1.1.3.1 Material Safety Data Sheets (MSDS).
- 1.1.4 Master Painters Institute (MPI)
 - 1.1.4.1 The Master Painters Institute (MPI)/Architectural Painting Specification Manual (ASM) - [current edition] .
 - 1.1.4.2 Standard GPS-1-[12] , MPI Green Performance Standard.
 - 1.1.4.3 Standard GPS-2-[12] , MPI Green Performance Standard.
- 1.1.5 National Research Council Canada (NRC)
 - 1.1.5.1 National Fire Code of Canada [2015] (NFC).
- 1.1.6 Society for Protective Coatings (SSPC)
 - 1.1.6.1 SSPC Painting Manual, Volume Two, 8th Edition, Systems and Specifications Manual.

1.2 Administrative Requirements

- 1.2.1 Scheduling:
 - 1.2.1.1 Submit work schedule for various stages of painting to Consultant for review. Provide schedule minimum of [48] hours in advance of proposed operations.
 - 1.2.1.2 Obtain written authorization from Consultant for changes in work schedule.
 - 1.2.1.3 Schedule new additions to existing building coordinate painting operations with other trades.

1.3 Action And Informational Submittals

- 1.3.1 Provide in accordance with Section [01 33 00- Submittal Procedures] .
- 1.3.2 Product Data:
 - 1.3.2.1 Provide manufacturer's instructions, printed product literature and data sheets for [paint and paint products]

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- and include product characteristics, performance criteria, physical size, finish and limitations.
 - 1.3.2.2 Submit [2] copies of WHMIS MSDS in accordance with Section [01 35 43- Environmental Procedures] [01 35 29.06- Health and Safety Requirements] .
 - 1.3.2.3 Confirm products to be used are in MPI's approved product list.
- 1.3.3 Upon completion, provide records of products used. List products in relation to finish system and include the following:
 - 1.3.3.1 Product name, type and use.
 - 1.3.3.2 Manufacturer's product number.
 - 1.3.3.3 Colour number[s] .
 - 1.3.3.4 MPI Environmentally Friendly classification system rating.
 - 1.3.3.5 Manufacturer's Material Safety Data Sheets (MSDS).
- 1.3.4 Samples:
 - 1.3.4.1 Submit full range colour sample chips to indicate where colour availability is restricted.
 - 1.3.4.2 Submit [duplicate] [200 x 300] mm sample panels of each [paint] [clear coating] [special finish] [stain] with specified paint or coating in colours, gloss/sheen and textures required to MPI Architectural Painting Specification Manual standards submitted on following substrate materials:
 - 1.3.4.2.1 [3 mm] [plate steel] for finishes over metal surfaces.
 - 1.3.4.2.2 [birch] [13 mm] plywood for finishes over wood surfaces.
 - 1.3.4.2.3 [50 mm] concrete block for finishes over concrete or concrete masonry surfaces.
 - 1.3.4.2.4 [13 mm] [gypsum board] for finishes over gypsum board and other smooth surfaces.
 - 1.3.4.2.5 [hardboard] [siding] [plywood] [10 mm] [cedar] for finishes over wood surfaces.
 - 1.3.4.3 Retain reviewed samples on-site to demonstrate acceptable standard of quality for appropriate on-site surface.
- 1.3.5 Test reports: Provide certified test reports for paint from approved independent testing laboratories, indicating compliance with specifications for specified performance characteristics and physical properties.
 - 1.3.5.1 Lead, cadmium and chromium: presence of and amounts.
 - 1.3.5.2 Mercury: presence of and amounts.

- 1.3.5.3 Organochlorines and PCBs: presence of and amounts.
- 1.3.6 Certificates: Provide certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties. MPI Gateway #.
- 1.3.7 Manufacturer's Instructions:
 - 1.3.7.1 Provide manufacturer's installation [application] instructions.

1.4 Closeout Submittals

- 1.4.1 Provide in accordance with Section [01 78 00- Closeout Submittals] .
- 1.4.2 Operation and Maintenance Data: Provide operation and maintenance data for [painting materials] for incorporation into manual.
- 1.4.3 Include:
 - 1.4.3.1 Product name, type and use.
 - 1.4.3.2 Manufacturer's product number.
 - 1.4.3.3 Colour number[s] .
 - 1.4.3.4 MPI Environmentally Friendly classification system rating.

1.5 Maintenance Material Submittals

- 1.5.1 Extra Stock Materials:
 - 1.5.1.1 Provide maintenance materials in accordance with Section [01 78 00- Closeout Submittals] .
 - 1.5.1.2 Submit [one] [1] [four] litre can of each type and colour of [primer] [stain] [finish coating] . Identify colour and paint type in relation to established colour schedule and finish system.

1.6 Quality Assurance

- 1.6.1 Qualifications:
 - 1.6.1.1 Contractor: to have a minimum of [5] years proven satisfactory experience. When requested, provide list of last [3] comparable jobs including, job name and location, specifying authority, and project manager.
 - 1.6.1.2 Qualified journeypersons as defined by local jurisdiction to be engaged in painting work.
 - 1.6.1.3 Apprentices: may be employed provided they work under direct supervision of qualified journeyperson in accordance with trade regulations.
 - 1.6.1.4 Conform to latest MPI requirements for exterior painting work including preparation and priming.

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- 1.6.1.5 Materials: in accordance with MPI Painting Specification Manual "Approved Product" listing and from a single manufacturer for each system used.
- 1.6.1.6 Retain purchase orders, invoices and documents to prove conformance with noted MPI requirements when requested by Consultant.
- 1.6.1.7 Standard of Acceptance:
 - 1.6.1.7.1 Walls: no defects visible from a distance of [1000] mm at [90 degrees] to surface.
 - 1.6.1.7.2 Soffits: no defects visible from [floor] at [45 degrees] to surface when viewed using final lighting source.
 - 1.6.1.7.3 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.
- 1.6.2 Mock-Ups:
 - 1.6.2.1 When requested by Consultant or Paint Inspection Agency, prepare and paint designated surface, area, room or item to requirements specified herein, with specified paint or coating showing selected colours, number of coats, gloss/sheen, textures and quality of work to MPI Painting Specification Manual standards for review and approval.
 - 1.6.2.2 Construct mock-ups in accordance with Section [01 45 00- Quality Control].
 - 1.6.2.2.1 Mock-up will be used to judge quality of work, substrate preparation, operation of equipment and material application and skill to MPI Architectural Painting Specification Manual standards.
 - 1.6.2.2.2 Locate where directed
 - 1.6.2.2.3 Allow [24] hours for inspection of mock-up before proceeding with Work.
 - 1.6.2.2.4 When accepted, mock-up will demonstrate minimum standard of quality required for this work. [Approved mock-up may remain as part of finished work.] [Remove mock-up and dispose of materials when no longer required and when directed by Consultant.]

1.7 Delivery, Storage And Handling

- 1.7.1 Deliver, store and handle materials in accordance with Section [with manufacturer's written instructions] [01 61 00- Common Product Requirements] .

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- 1.7.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
 - 1.7.2.1 Labels: to indicate:
 - 1.7.2.1.1 Type of paint or coating.
 - 1.7.2.1.2 Compliance with applicable standard.
 - 1.7.2.1.3 Colour number in accordance with established colour schedule.
- 1.7.3 Storage and Handling Requirements:
 - 1.7.3.1 Store materials [in dry location] indoors and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - 1.7.3.2 Observe manufacturer's recommendations for storage and handling.
 - 1.7.3.3 Store materials and supplies away from heat generating devices.
 - 1.7.3.4 Store materials and equipment in well ventilated area with temperature range [7] degrees C to [30] degrees C.
 - 1.7.3.5 Keep areas used for storage, cleaning and preparation, clean and orderly to approval of Consultant. After completion of operations, return areas to clean condition to approval of Consultant.
 - 1.7.3.6 Remove paint materials from storage only in quantities required for same day use.
 - 1.7.3.7 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling storage, and disposal of hazardous materials.
 - 1.7.3.8 Fire Safety Requirements:
 - 1.7.3.8.1 Provide [one] [9] kg [dry chemical] [Type ABC] fire extinguisher adjacent to storage area.
 - 1.7.3.8.2 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.
 - 1.7.3.8.3 Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code of Canada (NFC).
- 1.7.4 Develop [Construction Waste Management Plan] [Waste Reduction Workplan] related to Work of this Section.

- 1.7.5 Packaging Waste Management: remove for reuse [by manufacturer] [and return] of [packaging materials] [pallets,] [padding,] [crates,] as specified in [Waste Reduction Workplan] [Construction Waste Management Plan] in accordance with Section 01 74 19- Waste Management and Disposal .

1.8 Site Conditions

- 1.8.1 Heating, Ventilation and Lighting:
- 1.8.1.1 Provide heating facilities to maintain ambient air and substrate temperatures above [10] degrees C for 24 hours before, during and after paint application until paint has cured sufficiently.
 - 1.8.1.2 Provide continuous ventilation for [7] days after completion of application of paint.
 - 1.8.1.3 Co-ordinate use of existing ventilation system with Consultant and ensure its operation during and after application of paint as required.
 - 1.8.1.4 Provide temporary ventilating and heating equipment where permanent facilities are not available or supplemental ventilating and heating equipment if ventilation and heating from existing system is inadequate to meet minimum requirements.
 - 1.8.1.5 Provide minimum lighting level of [323] Lux on surfaces to be painted.
 - 1.8.1.6 Unless pre-approved written approval by Consultant and product manufacturer, perform no painting when:
 - 1.8.1.6.1 Ambient air and substrate temperatures are below [10] degrees C.
 - 1.8.1.6.2 Substrate temperature is above [32] degrees C unless paint is specifically formulated for application at high temperatures.
 - 1.8.1.6.3 Substrate and ambient air temperatures are not expected to fall within MPI or paint manufacturer's prescribed limits.
 - 1.8.1.6.4 The relative humidity is under [85] % or when the dew point is more than [3] degrees C variance between the air/surface temperature. Paint should not be applied if the dew point is less than [3] degrees C below the ambient or surface temperature. Use sling psychrometer to establish the relative humidity before beginning paint work.

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- 1.8.1.6.5 Rain or snow are forecast to occur before paint has thoroughly cured or when it is foggy, misty, raining or snowing at site.
 - 1.8.1.6.6 Ensure that conditions are within specified limits during drying or curing process, until newly applied coating can itself withstand 'normal' adverse environmental factors.
 - 1.8.1.7 Perform painting work when maximum moisture content of the substrate is below:
 - 1.8.1.7.1 [12] % for concrete and masonry (clay and concrete brick/block). Allow new concrete and masonry to cure minimum of 28 days.
 - 1.8.1.7.2 [15] % for hard wood.
 - 1.8.1.7.3 [17] % for soft wood.
 - 1.8.1.7.4 [12] % for plaster and gypsum board.
 - 1.8.1.8 Test for moisture using calibrated electronic Moisture Meter. Test concrete floors for moisture using "cover patch test".
 - 1.8.1.9 Test concrete, masonry and plaster surfaces for alkalinity as required.
- 1.8.2 Surface and Environmental Conditions:
 - 1.8.2.1 Apply paint finish in areas where dust is no longer being generated by related construction operations or when wind or ventilation conditions are such that airborne particles will not affect quality of finished surface.
 - 1.8.2.2 Apply paint to adequately prepared surfaces and to surfaces within moisture limits.
 - 1.8.2.3 Apply paint when previous coat of paint is dry or adequately cured.
- 1.8.3 Additional interior application requirements:
 - 1.8.3.1 Apply paint finishes when temperature at location of installation can be satisfactorily maintained within manufacturer's recommendations.
 - 1.8.3.2 Apply paint in occupied facilities during silent hours only. Schedule operations to approval of Consultant such that painted surfaces will have dried and cured sufficiently before occupants are affected.

2. PRODUCTS

2.1 Performance Requirements

2.1.1 Environmental Performance Requirements:

- 2.1.1.1 Provide paint products meeting MPI "Environmentally Friendly" [E3] [E2] [E1] ratings based on VOC (EPA Method 24) content levels.
- 2.1.1.2 Green Performance in accordance with MPI Standard [GPS-2] [GPS-1] .

2.2 Materials

- 2.2.1 Only Paint materials listed in the MPI Approved Products List (APL) are acceptable for use on this project.
- 2.2.2 Provide paint materials for paint systems from single manufacturer.
- 2.2.3 Only qualified products with [E3] [E2] "Environmentally Friendly" rating are acceptable for use on this project.
- 2.2.4 Conform to latest MPI requirements for interior painting work including preparation and priming.
- 2.2.5 Provide paint products meeting MPI "Environmentally Friendly" [E1] , [E2] [E3] ratings based on VOC (EPA Method 24) content levels.
- 2.2.6 Use MPI listed materials having minimum [E3] [E2] rating where indoor air quality (odour) requirements exist.
- 2.2.7 Paints, coatings, adhesives, solvents, cleaners, lubricants, and other fluids to be:
 - 2.2.7.1 [Water soluble] [Water clean-up]
 - 2.2.7.2 [non-flammable] [biodegradable]
 - 2.2.7.3 Be manufactured without compounds which contribute to ozone depletion in the upper atmosphere.
 - 2.2.7.4 Be manufactured without compounds which contribute to smog in the lower atmosphere.
 - 2.2.7.5 Do not contain [methylene chloride] , [chlorinated hydrocarbons] , [toxic metal pigments] .
- 2.2.8 Ensure manufacture and process of both water-borne surface coatings and recycled water-borne surface coatings does not release:
 - 2.2.8.1 Matter in undiluted production plant effluent generating 'Biochemical Oxygen Demand' (BOD) in excess of [15] mg/L to natural watercourse or sewage treatment facility lacking secondary treatment.
 - 2.2.8.2 Total Suspended Solids (TSS) in undiluted production plant effluent in excess of [15] mg/L to natural watercourse or a sewage treatment facility lacking secondary treatment.

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- 2.2.9 Water-borne paints and stains, recycled water-borne surface coatings and water borne varnishes to meet minimum "Environmentally Friendly" [E2] rating.
- 2.2.10 Recycled water-borne surface coatings to contain [50] % post-consumer material by volume.
- 2.2.11 Recycled water-borne surface coatings must not contain:
 - 2.2.11.1 Lead in excess of [600.0] ppm weight/weight total solids.
 - 2.2.11.2 Mercury in excess of [50.0] ppm weight/weight total product.
 - 2.2.11.3 Cadmium in excess of [1.0] ppm weight/weight total product.
 - 2.2.11.4 Hexavalent chromium in excess of [3.0] ppm weight/weight total product.
 - 2.2.11.5 Organochlorines or polychlorinated biphenyls (PCBS) in excess of [1.0] ppm weight/weight total product.

2.3 Colours

- 2.3.1 Submit proposed Colour Schedule to Consultant for review.
- 2.3.2 Colour schedule will be based upon Architectural Working Drawings.
- 2.3.3 Selection of colours will be from manufacturers full range of colours.
- 2.3.4 Where specific products are available in restricted range of colours, selection based on limited range.
- 2.3.5 Second coat in three coat system to be tinted slightly lighter colour than top coat to show visible difference between coats, if requested by Consultant.
- 2.3.6 For deep and ultra deep colours; 4 coats may be required.

2.4 Mixing And Tinting

- 2.4.1 Perform colour tinting operations prior to delivery of paint to site. Obtain written approval from Consultant for tinting of painting materials.
- 2.4.2 Mix paste, powder or catalyzed paint mixes in accordance with manufacturer's written instructions.
- 2.4.3 Use and add thinner in accordance with paint manufacturer's recommendations. Do not use kerosene or similar organic solvents to thin water-based paints.
- 2.4.4 Thin paint for spraying in accordance with paint manufacturer's instructions.
- 2.4.5 Re-mix paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and colour and gloss uniformity. Strain as necessary.

2.5 Gloss/Sheen Ratings

2.5.1 Paint gloss is defined as sheen rating of applied paint, in accordance with following values:

Gloss @ 60 degrees	Sheen @ 85 degrees	
Gloss Level 1 - Matte Finish (flat)	Max. 5	Max. 10
Gloss Level 2 - Velvet-Like Finish	Max.10	10 to 35
Gloss Level 3 - Eggshell Finish	10 to 25	10 to 35
Gloss Level 4 - Satin-Like Finish	20 to 35	min. 35
Gloss Level 5 - Traditional Semi-Gloss Finish	35 to 70	
Gloss Level 6 - Traditional Gloss	70 to 85	
Gloss Level 7 - High Gloss Finish	More than 85	

2.5.2 Gloss level ratings of painted surfaces [as indicated] [as noted on Finish Schedule] .

2.6 Interior Painting Systems

2.6.1 Concrete vertical surfaces: including horizontal soffits:

- 2.6.1.1 INT 3. 1A - Latex [insert gloss level] finish (over alkali-resistant primer).
- 2.6.1.2 INT 3.1B - Latex [insert texture type] (over latex aggregate) [insert gloss level] finish.
- 2.6.1.3 INT 3.1C - High performance architectural latex (over W.B. alkali-resistant primer) [insert gloss level] finish.
- 2.6.1.4 INT 3.1D - Alkyd [insert gloss level] (over W.B. alkali-resistant primer) finish.
- 2.6.1.5 INT 3.1E - Latex [insert gloss level] (over latex primer) finish.
- 2.6.1.6 INT 3.1F – Epoxy (tile-like) [semi-gloss] [gloss] finish [for smooth concrete] .
- 2.6.1.7 INT 3.1G - Epoxy - modified latex (tile-like) finish [for smooth concrete] .
- 2.6.1.8 INT 3.1H - Multicolour finish.
- 2.6.1.9 INT 3.1J - Water repellent (paintable) finish.
- 2.6.1.10 INT 3.1K - Concrete stain finish.

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- 2.6.1.11 INT 3.1L - W.B. light industrial [insert gloss level] (over W.B. alkali-resistant primer) coating.
- 2.6.1.12 INT 3.1M - Institutional low odour/ VOC [insert gloss level] (over W.B. primer sealer) finish.
- 2.6.1.13 INT 3.1N - Latex [insert gloss level] /[insert texture type] [flat] [non-flat] aggregate coating.
- 2.6.1.14 INT 3.1P – Epoxy High Build [gloss] [low gloss] .
- 2.6.2 Concrete horizontal surfaces: floors and stairs:
 - 2.6.2.1 INT 3.2A - Latex floor enamel [low gloss] [gloss] finish.
 - 2.6.2.2 INT 3.2B - Alkyd floor enamel [gloss] [low gloss] finish.
 - 2.6.2.3 INT 3.2C - Epoxy finish [semi-gloss] [gloss] .
 - 2.6.2.4 INT 3.2D - Pigmented polyurethane (over epoxy) finish.
 - 2.6.2.5 INT 3.2E - Concrete stain finish.
 - 2.6.2.6 INT 3.2F - Concrete floor sealer.
 - 2.6.2.7 INT 3.2G – Concrete floor sealer, W.B.
 - 2.6.2.8 INT 3.2H - Latex zone/traffic marking finish [for parking lines, etc] .
 - 2.6.2.9 INT 3.2J - Alkyd zone/traffic marking finish [for parking lines, etc.] .
 - 2.6.2.10 INT 3.2K – Polyurethane, Clear (2 component) finish.
 - 2.6.2.11 INT 3.2L - Epoxy High Build [gloss] [low gloss] with Shrinkage-reducing admixture (SRA) finish.
- 2.6.3 Cementitious composition board surfaces:
 - 2.6.3.1 INT 3.3A – Latex (over W.B. alkali-resistant primer) [insert gloss level] finish.
 - 2.6.3.2 INT 3.3B - High performance architectural latex (over W.B. alkali-resistant primer) [insert gloss level] finish.
 - 2.6.3.3 INT 3.3C – Alkyd (over W.B. alkali-resistant primer) [insert gloss level] finish.
 - 2.6.3.4 INT 3.3D - Epoxy-Modified Latex finish.
 - 2.6.3.5 INT 3.3E - Epoxy (tile like) finish.
 - 2.6.3.6 INT 3.3F – Multicolour (over primer sealer for multicolour systems) finish.
 - 2.6.3.7 INT 3.3G - Institutional low odour/ VOC [insert gloss level] (over W.B. primer sealer) finish.
 - 2.6.3.8 INT 3.3H - W.B. light industrial [insert gloss level] (over W.B. alkali resistant primer) coating.
- 2.6.4 Clay masonry units: pressed and extruded brick:
 - 2.6.4.1 INT 4.1A - Latex [insert gloss level] (over W.B. alkali-resistant primer) finish.

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- 2.6.4.2 INT 4.1B - Latex [insert gloss level] /[insert texture type] aggregate coating.
- 2.6.4.3 INT 4.1C - W.B. light industrial [insert gloss level] (over W.B. alkali-resistant primer) coating.
- 2.6.4.4 INT 4.1D - Alkyd [insert gloss level] (over W.B. alkali-resistant primer) finish.
- 2.6.4.5 INT 4.1F - Epoxy (tile like) finish [gloss] [semi-gloss] [for smooth brick] .
- 2.6.4.6 INT 4.1G – Epoxy-Modified Latex finish [for smooth brick] .
- 2.6.4.7 INT 4.1H - Multicolour finish.
- 2.6.4.8 INT 4.1J – Water repellent clear (paintable) finish.
- 2.6.4.9 INT 4.1K - Polyurethane, clear, 2 component finish.
- 2.6.4.10 INT 4.1L - High performance architectural latex [insert gloss level] (over W.B. alkali-resistant primer) finish.
- 2.6.4.11 INT 4.1M - Institutional low odour/ VOC [insert gloss level] (over W.B. primer sealer) finish.
- 2.6.5 Concrete masonry units: smooth and split face block and brick:
 - 2.6.5.1 INT 4.2A - Latex [insert gloss level] (over latex block filler) finish.
 - 2.6.5.2 INT 4.2B - Latex [insert gloss level] /[insert texture type] (flat and non-flat) aggregate coating.
 - 2.6.5.3 INT 4.2C - Alkyd [insert gloss level] (over latex block filler) finish.
 - 2.6.5.4 INT 4.2D - High performance architectural latex (over latex block filler) [insert gloss level] finish.
 - 2.6.5.5 INT 4.2E - Institutional low odour/ VOC [insert gloss level] (over latex block filler) finish.
 - 2.6.5.6 INT 4.2F - Epoxy (tile-like) finish [gloss] [semi-gloss] (over latex block filler) [for dry environments] .
 - 2.6.5.7 INT 4.2G - Epoxy (tile-like) finish [gloss] [semi-gloss] (over latex block filler) [for wet environments] .
 - 2.6.5.8 INT 4.2H – Multicolour (over latex block filler) finish.
 - 2.6.5.9 INT 4.2J – Epoxy-Modified Latex finish (over latex block filler) [for dry environments] .
 - 2.6.5.10 INT 4.2K - W.B. light industrial [insert gloss level] (over latex block filler) coating.
 - 2.6.5.11 INT 4.2L -Water repellent (non-paintable) finish (not for low density block).
 - 2.6.5.12 INT 4.2M Water repellent (paintable) finish (not for low density block).
 - 2.6.5.13 INT 4.2N - Alkyd [insert gloss level] finish (over latex block filler and primer sealer).

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- 2.6.5.14 INT 4.2P – High Performance Architectural Latex [Insert gloss level] (over alkali-resistant primer).
- 2.6.5.15 INT 4.2R – Epoxy High Build [gloss] [low gloss] (over epoxy block filler)
- 2.6.6 Structural steel and metal fabrications: columns, beams, joists:
 - 2.6.6.1 INT 5.1A - Quick dry enamel [semi-gloss] [gloss] (over Q.D. alkyd primer) finish.
 - 2.6.6.2 INT 5.1B - W.B. light industrial [insert gloss level] (over W.B. rust-inhibitive primer) coating.
 - 2.6.6.3 INT 5.1C - W.B. Dry Fall [Insert gloss level] (over Q.D. alkyd primer) finish.
 - 2.6.6.4 INT 5.1CC - W.B. Dry Fall [Insert gloss level] (over alkyd primer) finish.
 - 2.6.6.5 INT 5.1D - Alkyd dry fall [Insert gloss level] (over Q.D. alkyd primer) finish.
 - 2.6.6.6 INT 5.1DD - Alkyd dry Fall [Insert gloss level] (over alkyd primer) finish.
 - 2.6.6.7 INT 5.1E Alkyd - [insert gloss level] (over Q.D. alkyd primer) finish.
 - 2.6.6.8 INT 5.1EE Alkyd - [insert gloss level] (over alkyd primer) finish.
 - 2.6.6.9 INT 5.1F - Polyurethane, Pigmented finish (over epoxy primer).
 - 2.6.6.10 INT 5.1G - Polyurethane, Pigmented finish (over high-build epoxy).
 - 2.6.6.11 INT 5.1H - Polyurethane, Pigmented finish (over epoxy and inorganic zinc).
 - 2.6.6.12 INT 5.1J - Polyurethane, Pigmented finish (over epoxy and epoxy zinc rich primer).
 - 2.6.6.13 INT 5.1K - Epoxy-Modified Latex (over W.B. rust-inhibitive primer) finish.
 - 2.6.6.14 INT 5.1L – Epoxy [gloss] [semi-gloss] (over epoxy primer) finish.
 - 2.6.6.15 INT 5.1LL - Epoxy Deck coating (over epoxy primer) finish.
 - 2.6.6.16 INT 5.1M - Aluminum paint [insert gloss level] (over Q.D. alkyd primer) finish.
 - 2.6.6.17 INT 5.1MM - Aluminum paint [insert gloss level] (over alkyd primer) finish.
 - 2.6.6.18 INT 5.1N - W.B. light industrial [insert gloss level] coating (over epoxy primer).
 - 2.6.6.19 INT 5.1P - High build epoxy (over epoxy zinc rich primer and high build epoxy).

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- 2.6.6.20 INT 5.1Q - Latex [insert gloss level] finish (over Q.D. alkyd primer).
- 2.6.6.21 INT 5.1QQ - Latex [insert gloss level] finish (over alkyd primer).
- 2.6.6.22 INT 5.1R - High performance architectural latex [insert gloss level] (over Q.D. alkyd primer) finish.
- 2.6.6.23 INT 5.1RR - High performance architectural latex [insert gloss level] (over alkyd primer) finish.
- 2.6.6.24 INT 5.1S - Institutional low odour/ VOC [insert gloss level] (over W.B. rust-inhibitive primer) finish.
- 2.6.6.25 INT 5.1T - Alkyd [insert gloss level] finish (over surface tolerant primer).
- 2.6.6.26 INT 5.1TT – Alkyd, W.B. [insert gloss level] finish (over W.B. rust-inhibitive primer).
- 2.6.6.27 INT 5.1U - Polyurethane, Pigmented finish (over H.B. self-priming epoxy).
- 2.6.6.28 INT 5.1V - Epoxy finish [gloss] [semi-gloss] (over H.B. self-priming epoxy).
- 2.6.6.29 INT 5.1W - Alkyd [insert gloss level] finish (over Q.D. shop primer) [for dry locations only] .
- 2.6.6.30 INT 5.1X - Latex [insert gloss level] finish (over Q.D. shop primer) [for dry locations only] .
- 2.6.6.31 INT 5.1Y - Epoxy High Build [low-gloss] [gloss] (over epoxy primer) with SRA.
- 2.6.6.32 INT 5.1Z - W.B. Dry fall (over Q.D. shop primer) (for dry locations).
- 2.6.6.33 INT 5.1ZZ – Alkyd Dry Fall (over Q.D. shop primer) (for dry locations).
- 2.6.6.34 INT 5.1Z – Q.D. Shop paint finish (for dry locations only) [do not topcoat] .
- 2.6.7 Steel - high heat: (boilers, furnaces, heat exchangers, breeching, pipes, flues, stacks, etc., with temperature range as noted):
 - 2.6.7.1 INT 5.2A - Heat resistant enamel finish, maximum 400 degrees F (205 degrees C).
 - 2.6.7.2 INT 5.2B - Heat resistant enamel, aluminum paint finish, maximum 800 degrees F (427 degrees C).
 - 2.6.7.3 INT 5.2C - Inorganic zinc rich coating, maximum 750 degrees F (400 degrees C)
 - 2.6.7.4 INT 5.2D - High heat resistant coating, maximum 1100 degrees F (593 degrees C).
- 2.6.8 Galvanized metal: doors, frames, railings, misc. steel, pipes, overhead decking, and ducts.

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- 2.6.8.1 INT 5.3A - Latex [insert gloss level] (over cementitious primer) finish.
- 2.6.8.2 INT 5.3B - W.B. light industrial [insert gloss level] (over cementitious primer) coating.
- 2.6.8.3 INT 5.3C - Alkyd [insert gloss level] finish (over cementitious primer).
- 2.6.8.4 INT 5.3D - Epoxy finish [semi-gloss] [gloss] (over epoxy primer).
- 2.6.8.5 INT 5.3F - Alkyd dry wall finish [insert gloss level] (low contact/low traffic) (over cementitious primer).
- 2.6.8.6 INT 5.3G - Aluminum paint (over cementitious primer) finish.
- 2.6.8.7 INT 5.3H - W.B. dry fall [insert gloss level] finish (low contact/low traffic).
- 2.6.8.8 INT 5.3J - Latex [insert gloss level] finish (over W.B. galvanized primer).
- 2.6.8.9 INT 5.3K - W.B. light industrial [insert gloss level] coating (over W.B. galvanized primer).
- 2.6.8.10 INT 5.3L - Alkyd [insert gloss level] finish (over non-cementitious primer).
- 2.6.8.11 INT 5.3M - High performance architectural latex [insert gloss level] (over W.B. galvanized primer) finish.
- 2.6.8.12 INT 5.3N - Institutional low odour/ VOC [insert gloss level] (over W.B. galvanized primer) finish.
- 2.6.9 Aluminum: unanodized:
 - 2.6.9.1 INT 5.4A - Alkyd [insert gloss level] (over vinyl wash primer) finish.
 - 2.6.9.2 INT 5.4B – Epoxy [gloss] [semi-gloss] (over vinyl wash primer) finish.
 - 2.6.9.3 INT 5.4C - Polyurethane , Pigmented (over vinyl wash primer) finish.
 - 2.6.9.4 INT 5.4D - Aluminum paint (over vinyl wash primer) finish (for exposed aluminum).
 - 2.6.9.5 INT 5.4E - W.B. light industrial [insert gloss level] (over Q.D. primer for aluminum) coating.
 - 2.6.9.6 INT 5.4F - High performance architectural latex [insert gloss level] (over Q.D. primer for aluminum) finish.
 - 2.6.9.7 INT 5.4G - Institutional low odour/ VOC [insert gloss level] (over Q.D. primer for aluminum) finish.
 - 2.6.9.8 INT 5.4H - Latex [insert gloss level] (over Q.D. primer for aluminum) finish.
 - 2.6.9.9 INT 5.4J - Alkyd [insert gloss level] finish (over Q.D. primer for aluminum).

- 2.6.9.10 INT 5.4K – Epoxy [semi-gloss] [gloss] (over epoxy primer).
- 2.6.10 Copper:
 - 2.6.10.1 INT 5.5A - Alkyd [insert gloss level] (over vinyl wash primer) finish.
 - 2.6.10.2 INT 5.5B – Epoxy [semi-gloss] [gloss] (over epoxy primer) finish.
 - 2.6.10.3 INT 5.5C - Polyurethane, Pigmented (over vinyl wash primer) finish.
 - 2.6.10.4 INT 5.5D - Aluminum paint (over vinyl wash primer) finish.
 - 2.6.10.5 INT 5.5E - W.B. light industrial [insert gloss level] (over Q.D. primer for aluminum) coating.
 - 2.6.10.6 INT 5.5F - High performance architectural latex [insert gloss level] (over Q.D. primer for aluminum) finish.
 - 2.6.10.7 INT 5.5G - Institutional low odour/ VOC [insert gloss level] (over Q.D. primer for aluminum) finish.
 - 2.6.10.8 INT 5.5H - Latex [insert gloss level] (over Q.D. primer for aluminum) finish.
- 2.6.11 Stainless steel: unpolished:
 - 2.6.11.1 INT 5.6A - W.B. light industrial [insert gloss level] coating (over S.B. bonding primer).
 - 2.6.11.2 INT 5.6B - Alkyd [insert gloss level] (over vinyl wash primer) finish.
 - 2.6.11.3 INT 5.6C – Epoxy [gloss] [semi-gloss] (over epoxy primer) finish.
 - 2.6.11.4 INT 5.6D – Polyurethane, Pigmented (over vinyl wash primer) finish.
 - 2.6.11.5 INT 5.6E - Aluminum paint (over vinyl wash primer) finish.
 - 2.6.11.6 INT 5.6F - W.B. light industrial [insert gloss level] coating (over Q.D. primer for aluminum).
 - 2.6.11.7 INT 5.6G - High performance architectural latex [insert gloss level] (over S.B. bonding primer) finish.
 - 2.6.11.8 INT 5.6H - Latex [insert gloss level] (over S.B. bonding primer) finish.
- 2.6.12 Glue laminated beams and columns:
 - 2.6.12.1 INT 6.1A - Latex [insert gloss level] finish (over alkyd primer).
 - 2.6.12.2 INT 6.1B - Alkyd [insert gloss level] (over alkyd primer) finish.
 - 2.6.12.3 INT 6.1C - Alkyd varnish [insert gloss level] (over factory applied alkyd sanding sealer) finish.
 - 2.6.12.4 INT 6.1D - Polyurethane varnish [satin] [gloss] (over factory applied polyurethane) finish.

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- 2.6.12.5 INT 6.1E - Polyurethane, Pigmented finish.
- 2.6.12.6 INT 6.1F - W.B. Varnish, Clear[insert gloss level] finish.
- 2.6.12.7 INT 6.1G - Semi transparent stain, S.B. finish.
- 2.6.12.8 INT 6.1GG - Semi transparent stain, W.B. finish.
- 2.6.12.9 INT 6.1H - Alkyd solid colour stain finish.
- 2.6.12.10 INT 6.1J - Polyurethane varnish [satin] [gloss] finish (over stain).
- 2.6.12.11 INT 6.1K - Alkyd varnish [insert gloss level] finish (over stain).
- 2.6.12.12 INT 6.1L – Epoxy [semi-gloss] [gloss] finish.
- 2.6.12.13 INT 6.1M - Latex [insert gloss level] finish (over latex primer).
- 2.6.12.14 INT 6.1N - High performance architectural latex [insert gloss level] (over latex primer) finish.
- 2.6.12.15 INT 6.1P - Alkyd varnish [insert gloss level] finish (over stain and sealer).
- 2.6.12.16 INT 6.1Q - Institutional low odour/ VOC [insert gloss level] (over latex primer) finish.
- 2.6.12.17 INT 6.1R – W.B. Varnish, Clear[insert gloss level] finish (over S.B. stain).
- 2.6.12.18 INT 6.1RR - W.B. Varnish, Clear [insert gloss level] finish (over W.B. stain).
- 2.6.12.19 INT 6.1S - Polyurethane, Clear Moisture cured [flat] [gloss] finish (over S.B. stain).
- 2.6.12.20 INT 6.1T - Latex solid colour stain (over alkyd/oil primer) finish.
- 2.6.12.21 INT 6.1U - Fire Retardant, Pigmented. S.B. [insert gloss level] coating (ULC rated).
- 2.6.12.22 INT 6.1UU - Fire Retardant, Pigmented. W.B. [insert gloss level] coating (ULC rated).
- 2.6.12.23 INT 6.1V - Fire Retardant, Clear, S.B. [insert gloss level] coating (ULC rated).
- 2.6.12.24 INT 6.1VV - Fire Retardant, Clear, S.B. Topcoat [insert gloss level] coating (ULC rated).
- 2.6.12.25 INT 6.1W – Polyurethane, Clear, 2 component
- 2.6.13 Dimension lumber: columns, beams, exposed joists, underside of decking:
 - 2.6.13.1 INT 6.2A - Latex [insert gloss level] finish (over alkyd primer).
 - 2.6.13.2 INT 6.2B - High performance architectural latex [insert gloss level] (over alkyd primer) finish.

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- 2.6.13.3 INT 6.2C - Alkyd [insert gloss level] (over alkyd primer) finish.
- 2.6.13.4 INT 6.2D - Latex [insert gloss level] finish (over latex primer).
- 2.6.13.5 INT 6.2E – Multicolour (over alkyd primer) finish.
- 2.6.13.6 INT 6.2F - Fire Retardant Pigmented. S.B. [insert gloss level] coating (ULC rated).
- 2.6.13.7 INT 6.2FF - Fire Retardant Pigmented. W.B. [insert gloss level] coating (ULC rated).
- 2.6.13.8 INT 6.2G - Fire Retardant, Clear, S.B. [insert gloss level] coating (ULC rated).
- 2.6.13.9 INT 6.2GG - Fire Retardant, Clear, S.B. Topcoat [insert gloss level] coating (ULC rated).
- 2.6.13.10 INT 6.2H - Polyurethane varnish [satin] [gloss] finish.
- 2.6.13.11 INT 6.2J - Polyurethane varnish [satin] [gloss] finish (over stain).
- 2.6.13.12 INT 6.2K - Alkyd varnish [insert gloss level] finish (over stain and sealer).
- 2.6.13.13 INT 6.2L - Institutional low odour/ VOC [insert gloss level] (over latex primer) finish.
- 2.6.13.14 INT 6.2M - W.B. Varnish, clear [insert gloss level] finish (over S.B. stain).
- 2.6.13.15 INT 6.2MM - W.B. Varnish, clear [insert gloss level] finish (over W.B. stain).
- 2.6.13.16 INT 6.2N - Polyurethane, Clear, Moisture cured [flat] [gloss] (over S.B. stain) finish.
- 2.6.13.17 INT 6.2P - Alkyd varnish [insert gloss level] (over sanding sealer) finish.
- 2.6.13.18 INT 6.2Q – Polyurethane, Clear, 2 Component.
- 2.6.14 Dressed lumber: including doors, door and window frames, casings, mouldings:
 - 2.6.14.1 INT 6.3A - High performance architectural latex [insert gloss level] (over latex primer) finish.
 - 2.6.14.2 INT 6.3B - Alkyd [insert gloss level] (over alkyd primer) finish.
 - 2.6.14.3 INT 6.3BB - Alkyd, W.B [insert gloss level] (over latex primer) finish.
 - 2.6.14.4 INT 6.3C - Semi-transparent stain, S.B. finish (not for doors).
 - 2.6.14.5 INT 6.3CC - Semi-transparent stain, W.B. finish (not for doors).
 - 2.6.14.6 INT 6.3D - Alkyd varnish [semi-gloss] [gloss] finish (over S.B. stain).

- 2.6.14.7 INT 6.3DD - Alkyd varnish [gloss] [semi-gloss] finish (over W.B. stain).
- 2.6.14.8 INT 6.3E - Polyurethane varnish [gloss] [semi-gloss] finish (over S.B. stain).
- 2.6.14.9 INT 6.3EE - Polyurethane varnish [gloss] [semi-gloss] finish (over W.B. stain).
- 2.6.14.10 INT 6.3F - Lacquer [insert gloss level] finish (over S.B. stain).
- 2.6.14.11 INT 6.3G - Lacquer, Pigmented [insert gloss level] (over lacquer sanding sealer) finish.
- 2.6.14.12 INT 6.3H - Lacquer, Clear [insert gloss level] (over lacquer sanding sealer) finish.
- 2.6.14.13 INT 6.3J - Alkyd varnish [gloss] [semi-gloss] (over shellac) finish.
- 2.6.14.14 INT 6.3JJ - Alkyd varnish [gloss] [semi-gloss] (over sanding sealer) finish.
- 2.6.14.15 INT 6.3K - Polyurethane varnish [gloss] [semi-gloss] finish.
- 2.6.14.16 INT 6.3L – Epoxy [semi-gloss] [gloss] finish.
- 2.6.14.17 INT 6.3M - Danish oil finish.
- 2.6.14.18 INT 6.3N – Multicolour (over alkyd primer/sealer – tinted) finish.
- 2.6.14.19 INT 6.3P - W.B. light industrial [insert gloss level] (over alkyd primer/sealer) coating.
- 2.6.14.20 INT 6.3Q - W.B. Varnish clear [insert gloss level] finish.
- 2.6.14.21 INT 6.3R - Fire Retardant, Pigmented. S.B. [insert gloss level] finish (ULC rated).
- 2.6.14.22 INT 6.3RR - Fire Retardant, Pigmented. W.B. [insert gloss level] finish (ULC rated).
- 2.6.14.23 INT 6.3S - Fire Retardant, Clear, S.B. [insert gloss level] finish (ULC rated).
- 2.6.14.24 INT 6.3SS - Fire Retardant, Clear, S.B. Topcoat [insert gloss level] finish (ULC rated).
- 2.6.14.25 INT 6.3T - Latex [semi-gloss] [gloss] finish (over latex primer).
- 2.6.14.26 INT 6.3U - Latex [gloss] [semi-gloss] finish (over alkyd primer/sealer).
- 2.6.14.27 INT 6.3V - Institutional low odour/ VOC [insert gloss level] (over latex primer) finish.
- 2.6.14.28 INT 6.3W - W.B. Varnish, Clear [insert gloss level] finish (over S.B. stain).
- 2.6.14.29 INT 6.3WW - W.B. Varnish, Clear [insert gloss level] finish (over W.B. stain).

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- 2.6.14.30 INT 6.3X - Polyurethane, Clear, Moisture Cured[gloss] [flat] finish.
- 2.6.14.31 INT 6.3Y - Polyurethane, Clear, Moisture Cured[flat] [gloss] finish (over S.B. stain).
- 2.6.14.32 INT 6.3Z - Polyurethane, Clear, 2 component finish.
- 2.6.15 Wood paneling and casework: partitions, panels, shelving, millwork:
 - 2.6.15.1 INT 6.4A - Latex [insert gloss level] finish (over alkyd primer/sealer).
 - 2.6.15.2 INT 6.4B - Alkyd [insert gloss level] finish (over alkyd primer/sealer).
 - 2.6.15.3 INT 6.4BB – Alkyd, W.B. [insert gloss level] finish (over latex primer/sealer).
 - 2.6.15.4 INT 6.4C - Semi-Transparent stain, S.B. finish.
 - 2.6.15.5 INT 6.4CC - Semi-Transparent stain, W.B. finish.
 - 2.6.15.6 INT 6.4D - Alkyd varnish [insert gloss level] finish (over S.B. stain and shellac).
 - 2.6.15.7 INT 6.4DD - Alkyd Varnish [insert gloss level] finish (over S.B. stain and alkyd sanding sealer).
 - 2.6.15.8 INT 6.4E - Polyurethane varnish [satin] [gloss] finish (over S.B. stain).
 - 2.6.15.9 INT 6.4F - Lacquer [insert gloss level] finish (over S.B. stain).
 - 2.6.15.10 INT 6.4G - Alkyd varnish [insert gloss level] (over shellac) finish.
 - 2.6.15.11 INT 6.4GG - Alkyd varnish [insert gloss level] (over sanding sealer) finish.
 - 2.6.15.12 INT 6.4H - Lacquer, Pigmented [insert gloss level] (over lacquer sanding sealer) finish.
 - 2.6.15.13 INT 6.4J - Polyurethane varnish [gloss] [satin] finish.
 - 2.6.15.14 INT 6.4K - Danish oil finish.
 - 2.6.15.15 INT 6.4L – Multicolour (over alkyd primer/sealer) finish.
 - 2.6.15.16 INT 6.4M – W.B. Varnish, Clear acrylic [insert gloss level] finish.
 - 2.6.15.17 INT 6.4N – W.B. light industrial [insert gloss level] (over alkyd primer/sealer) coating.
 - 2.6.15.18 INT 6.4P - Fire Retardant, Pigmented. S.B. [insert gloss level] coating (ULC rated).
 - 2.6.15.19 INT 6.4PP - Fire Retardant, Pigmented. W.B. [insert gloss level] coating (ULC rated).
 - 2.6.15.20 INT 6.4Q - Fire Retardant, Clear, S.B. [insert gloss level] coating (ULC rated).

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- 2.6.15.21 INT 6.4QQ - Fire Retardant, Clear, S.B. Topcoat [insert gloss level] coating (ULC rated).
- 2.6.15.22 INT 6.4R - Latex [gloss] [semi-gloss] finish (over latex primer).
- 2.6.15.23 INT 6.4S - High performance architectural latex [insert gloss level] (over latex primer) finish.
- 2.6.15.24 INT - 6.4T Institutional low odour/ VOC [insert gloss level] (over latex primer) finish.
- 2.6.15.25 INT 6.4U - W.B. Varnish, Clear [insert gloss level] finish (over S.B. stain).
- 2.6.15.26 INT 6.4UU - W.B. Varnish, Clear [insert gloss level] finish (over W.B. stain).
- 2.6.15.27 INT 6.4V - Polyurethane, Clear, Moisture cured [flat] [gloss] finish (over S.B. stain).
- 2.6.15.28 INT 6.4W - Lacquer [insert gloss level] finish (over S.B. stain and lacquer sanding sealer).
- 2.6.15.29 INT 6.4X - Lacquer, Pigmented [insert gloss level] (over lacquer sanding sealer pigmented) finish.
- 2.6.15.30 INT 6.4Y - Lacquer, Clear [insert gloss level] (over lacquer sanding sealer) finish.
- 2.6.16 Wood floors and stairs: including hardwood flooring:
 - 2.6.16.1 INT 6.5A - Alkyd floor enamel [gloss] [low gloss] finish.
 - 2.6.16.2 INT 6.5B - Polyurethane varnish [gloss] (over S.B. stain).
 - 2.6.16.3 INT 6.5C - Polyurethane varnish [gloss] .
 - 2.6.16.4 INT 6.5E - Alkyd game line marking.
 - 2.6.16.5 INT 6.5F - Epoxy game line marking [semi-gloss] [gloss] .
 - 2.6.16.6 INT 6.5G - Latex porch and floor [low gloss] [gloss] (over alkyd primer/sealer) enamel finish.
 - 2.6.16.7 INT 6.5J - Polyurethane, Moisture cured [gloss] (over S.B. stain).
 - 2.6.16.8 INT 6.5K - Polyurethane, Moisture cured [gloss] finish.
 - 2.6.16.9 INT 6.5M – Polyurethane, Clear, 2 component.
 - 2.6.16.10 2.6.17 Fibreglass: panels, trims, fabrications:
 - 2.6.16.11 INT 6.7A - Latex [insert gloss level] (over S.B. bonding primer) finish.
 - 2.6.16.12 INT 6.7AA - Latex [insert gloss level] (over W.B. bonding primer) finish.
 - 2.6.16.13 INT 6.7B - Alkyd [insert gloss level] (over S.B. bonding primer) finish.
 - 2.6.16.14 INT 6.7BB - Alkyd [insert gloss level] (over W.B. bonding primer) finish.

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- 2.6.16.15 INT 6.7C - W.B. light industrial [insert gloss level] (over S.B. bonding primer) coating.
- 2.6.16.16 INT 6.7CC - W.B. light industrial [insert gloss level] (over W.B. bonding primer) coating.
- 2.6.16.17 INT 6.7D – Epoxy [gloss] [semi-gloss] finish.
- 2.6.16.18 INT 6.7E - Polyurethane, Pigmented (over epoxy) finish.
- 2.6.16.19 INT 6.7F - Epoxy-Modified Latex [semi-gloss] [gloss] finish.
- 2.6.16.20 INT 6.7G – Multicolour (over S.B. bonding primer) finish.
- 2.6.16.21 INT 6.7GG - Multicolour (over W.B. bonding primer) finish.
- 2.6.16.22 INT 6.7H - High performance Architectural latex [insert gloss level] (over S.B. bonding primer) finish.
- 2.6.16.23 INT 6.7HH - High performance Architectural latex [insert gloss level] (over W.B. bonding primer) finish.
- 2.6.16.24 INT 6.7J - Institutional low odour VOC [insert gloss level] (over W.B. bonding primer) finish.
- 2.6.17 Plastic: lumber, panels, trims, fabrications, vinyl wall covering, PVA/PVC materials:
 - 2.6.17.1 INT 6.8A - High performance architectural latex [insert gloss level] (over S.B. bonding primer) finish.
 - 2.6.17.2 INT 6.8AA - High performance architectural latex [insert gloss level] (over W.B. bonding primer) finish.
 - 2.6.17.3 INT 6.8B - Alkyd [insert gloss level] (over S.D. bonding primer) finish.
 - 2.6.17.4 INT 6.8C - W.B. light industrial [insert gloss level] (over S.B. bonding primer) coating.
 - 2.6.17.5 INT 6.8CC - W.B. light industrial [insert gloss level] (over W.B. bonding primer) coating.
 - 2.6.17.6 INT 6.8D – Multicolour (over S.B. bonding primer) finish.
 - 2.6.17.7 INT 6.8E - Latex [insert gloss level] (over S.B. bonding primer) finish.
 - 2.6.17.8 INT 6.8EE - Latex [insert gloss level] (over W.B. bonding primer) finish.
 - 2.6.17.9 INT 6.8F - Institutional low odour/ VOC [insert gloss level] (over W.B. bonding primer) finish.
- 2.6.18 Spray textured surfaces: ceilings:
 - 2.6.18.1 INT 9.1A - Latex flat finish [spray application only] .
 - 2.6.18.2 INT 9.1B - Latex [insert gloss level] finish (over alkyd sealer).
 - 2.6.18.3 INT 9.1C - Alkyd flat finish.
 - 2.6.18.4 INT 9.1D - Alkyd [insert gloss level] finish (over alkyd sealer).

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- 2.6.18.5 INT 9.1E – Latex [insert gloss level] finish [spray application only] .
- 2.6.19 Plaster and gypsum board: gypsum wallboard, drywall, "sheet rock type material", and textured finishes:
 - 2.6.19.1 INT 9.2A - Latex [insert gloss level] finish (over latex primer/sealer).
 - 2.6.19.2 INT 9.2B - High performance architectural latex [insert gloss level] (over latex primer/sealer) finish.
 - 2.6.19.3 INT 9.2C - Alkyd [insert gloss level] finish (over latex primer/sealer).
 - 2.6.19.4 INT 9.2CC – Alkyd, W.B. [insert gloss level] finish.
 - 2.6.19.5 INT 9.2E - Epoxy (tile-like) [gloss] [semi-gloss] (over latex primer/sealer) finish.
 - 2.6.19.6 INT 9.2F - Epoxy-Modified Latex (tile-like) [gloss] [semi-gloss] (over latex primer/sealer) finish.
 - 2.6.19.7 INT 9.2G – Multicolour (over primer sealer for multi-color systems) finish.
 - 2.6.19.8 INT 9.2H - Fire Retardant, Clear coating (ULC rated).
 - 2.6.19.9 INT 9.2HH - Fire Retardant, Pigmented coating (ULC rated).
 - 2.6.19.10 INT 9.2J - W.B. Fire Retardant coating (ULC rated).
 - 2.6.19.11 INT 9.2K - Latex [insert gloss level] finish (over alkyd primer /sealer) [for plaster only] .
 - 2.6.19.12 INT 9.2L - W.B. light industrial [insert gloss level] (over latex primer/sealer) coating.
 - 2.6.19.13 INT 9.2M - Institutional low odour VOC [insert gloss level] (over primer sealer, low odour low VOC) finish.
 - 2.6.19.14 Epoxy High Build [low gloss] [gloss] (over latex sealer).
- 2.6.20 Acoustic panels and tiles:
 - 2.6.20.1 INT 9.3A - Latex flat finish.
 - 2.6.20.2 INT 9.3B - Latex [insert gloss level] finish (over alkyd sealer).
 - 2.6.20.3 INT 9.3C - Alkyd flat finish.
 - 2.6.20.4 INT 9.3D - Institutional low odour VOC [insert gloss level] finish.
 - 2.6.20.5 INT 9.3E High performance architectural latex [insert gloss level] finish.
- 2.6.21 Canvas and cotton coverings.
 - 2.6.21.1 INT 10.1A - Latex [insert gloss level] (over latex primer/sealer) finish.

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- 2.6.21.2 INT 10.1B - Alkyd [insert gloss level] (over latex primer/sealer) finish.
- 2.6.21.3 INT 10.1C - Aluminum paint (over latex primer/sealer) finish.
- 2.6.21.4 INT 10.1D - Institutional low odour VOC [insert gloss level] (over latex primer/sealer) finish.
- 2.6.22 Bituminous coated surfaces: cast iron pipe, concrete, etc.:
 - 2.6.22.1 INT 10.2A - Latex [insert gloss level] (over rust-inhibitive primer) finish.
 - 2.6.22.2 INT 10.2B - Alkyd [insert gloss level] (over rust-inhibitive primer) finish.
 - 2.6.22.3 INT 10.2C - Aluminum paint (over rust-inhibitive primer) finish.

2.7 Source Quality Control

- 2.7.1 Perform following tests on each batch of consolidated post-consumer material before surface coating is reformulated and canned. Testing by laboratory or facility which has been accredited by Standards Council of Canada.
 - 2.7.1.1 Lead, cadmium and chromium are to be determined using ICP-AES (Inductively Coupled Plasma - Atomic Emission Spectroscopy) technique no. 6010 as defined in EPA SW-846.
 - 2.7.1.2 Mercury is to be determined by Cold Vapour Atomic Absorption Spectroscopy using Technique no. 7471 as defined in EPA SW-846.
 - 2.7.1.3 Organochlorines and PCBs are to be determined by Gas Chromatography using Technique no. 8081 as defined in EPA SW-846.

3. EXECUTION

3.1 Manufacturer's Instructions

- 3.1.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and data sheet.

3.2 General

- 3.2.1 Perform preparation and operations for interior painting in accordance with MPI Architectural Painting Specifications Manual except where specified otherwise.
- 3.2.2 Apply paint materials in accordance with paint manufacturer's written application instructions.

3.3 Examination

- 3.3.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable to be painted in accordance with manufacturer's written instructions.
 - 3.3.1.1 Visually inspect substrate in presence of Consultant.
 - 3.3.1.2 Inform Consultant of unacceptable conditions immediately upon discovery.
 - 3.3.1.3 Proceed with installation only after unacceptable conditions have been remedied [and after receipt of written approval to proceed from Consultant.
- 3.3.2 Interior repainting work: inspected by MPI Accredited Paint Inspection Agency (inspector) acceptable to specifying authority and local Painting Contractor's Association. Painting contractor to notify Paint Inspection Agency minimum of [one] week prior to commencement of work and provide copy of project repainting specification and Finish Schedule.
- 3.3.3 Interior surfaces requiring repainting: inspected by both painting contractor and Paint Inspection Agency who will notify Consultant in writing of defects or problems, prior to commencing repainting work, or after surface preparation if unseen substrate damage is discovered.
- 3.3.4 Conduct moisture testing of surfaces to be painted using properly calibrated electronic moisture meter, except test concrete floors for moisture using simple "cover patch test". Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.
- 3.3.5 Maximum moisture content as follows:
 - 3.3.5.1 Stucco, plaster and gypsum board: [12] %.
 - 3.3.5.2 Concrete: [12] %.
 - 3.3.5.3 Clay and Concrete Block/Brick: [12] %.
 - 3.3.5.4 Hard Wood: [15] %.
 - 3.3.5.5 Soft Wood: [17%] .

3.4 Preparation

- 3.4.1 Protection (not applicable to new painting work):
 - 3.4.1.1 Protect existing building surfaces and adjacent structures from paint spatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore surfaces as directed by Consultant .
 - 3.4.1.2 Protect items that are permanently attached such as Fire Labels on doors and frames.
 - 3.4.1.3 Protect factory finished products and equipment.

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- 3.4.1.4 Protect [passing pedestrians] , [building occupants] [and general public] in and about the building.
- 3.4.2 Surface Preparation (not applicable to new painting work):
 - 3.4.2.1 Remove electrical cover plates, light fixtures, surface hardware on doors, bath accessories and other surface mounted equipment, fittings and fastenings prior to undertaking painting operations. Identify and store items in secure location and re-installed after painting is completed.
 - 3.4.2.2 Move and cover furniture and portable equipment as necessary to carry out painting operations. Replace as painting operations progress.
 - 3.4.2.3 Place "WET PAINT" signs in occupied areas as painting operations progress. Signs to approval of Consultant.
- 3.4.3 Clean and prepare surfaces in accordance with MPI Architectural Painting Specification Manual requirements. Refer to MPI Manual in regard to specific requirements and as follows:
 - 3.4.3.1 Remove dust, dirt, and other surface debris by [vacuuming,] wiping with dry, clean cloths [or compressed air] .
 - 3.4.3.2 Wash surfaces with a biodegradable detergent [and bleach where applicable] and clean warm water using a stiff bristle brush to remove dirt, oil and other surface contaminants.
 - 3.4.3.3 Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.
 - 3.4.3.4 Allow surfaces to drain completely and allow to dry thoroughly.
 - 3.4.3.5 Prepare surfaces for water-based painting, water-based cleaners should be used in place of organic solvents.
 - 3.4.3.6 Use trigger operated spray nozzles for water hoses.
 - 3.4.3.7 Many water-based paints cannot be removed with water once dried. Minimize use of mineral spirits or organic solvents to clean up water-based paints.
- 3.4.4 Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before prime coat is applied and between applications of remaining coats. Apply primer, paint, or pretreatment as soon as possible after cleaning and before deterioration occurs.
- 3.4.5 Where possible, prime non-exposed surfaces of new wood surfaces before installation. Use same primers as specified for exposed surfaces.

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- 3.4.5.1 Apply sealer to MPI #36 over knots, pitch, sap and resinous areas.
- 3.4.5.2 Apply wood filler to nail holes and cracks.
- 3.4.5.3 Tint filler to match stains for stained woodwork.
- 3.4.6 Sand and dust between coats as required to provide adequate adhesion for next coat and to remove defects visible from a distance up to 1000 mm.
- 3.4.7 Carried out during shop priming: clean metal surfaces to be painted by removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with MPI requirements. Remove traces of blast products from surfaces, pockets and corners to be painted by [blowing with clean dry compressed air] [vacuum cleaning] [brushing with clean brushes] .
- 3.4.8 Touch up of shop primers with primer as specified.
- 3.4.9 Do not apply paint until prepared surfaces have been accepted by Consultant

3.5 Existing Conditions

- 3.5.1 Conduct moisture testing of surfaces to be painted using properly calibrated electronic moisture meter, except test concrete floors for moisture using simple "cover patch test" and report findings to Consultant. Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.
- 3.5.2 Maximum moisture content as follows:
 - 3.5.2.1 Stucco: [12] %.
 - 3.5.2.2 Concrete: [12] %.
 - 3.5.2.3 Clay and Concrete Block/Brick: [12] %.
 - 3.5.2.4 Hard Wood: [15] %.
 - 3.5.2.5 Soft Wood: [17%] .

3.6 Application

- 3.6.1 Method of application to be as approved by Consultant. Apply paint by [brush] [roller] [air sprayer] [airless sprayer] . Conform to manufacturer's application instructions unless specified otherwise.
- 3.6.2 Brush and Roller Application:
 - 3.6.2.1 Apply paint in uniform layer using brush and/or roller type suitable for application.
 - 3.6.2.2 Work paint into cracks, crevices and corners.
 - 3.6.2.3 Paint surfaces and corners not accessible to brush using spray, daubers and/or sheepskins. Paint surfaces and corners not accessible to roller using brush, daubers or sheepskins.

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- 3.6.2.4 Brush and/or roll out runs and sags, and over-lap marks. Rolled surfaces free of roller tracking and heavy stipple.
- 3.6.2.5 Remove runs, sags and brush marks from finished work and repaint.
- 3.6.3 Spray application:
 - 3.6.3.1 Provide and maintain equipment that is suitable for intended purpose, capable of atomizing paint to be applied, and equipped with suitable pressure regulators and gauges.
 - 3.6.3.2 Keep paint ingredients properly mixed in containers during paint application either by continuous mechanical agitation or by intermittent agitation as frequently as necessary.
 - 3.6.3.3 Apply paint in uniform layer, with overlapping at edges of spray pattern. Back roll first coat application.
 - 3.6.3.4 Brush out immediately all runs and sags.
 - 3.6.3.5 Use brushes and rollers to work paint into cracks, crevices and places which are not adequately painted by spray.
- 3.6.4 Use dipping, sheepskins or daubers only when no other method is practical in places of difficult access.
- 3.6.5 Apply coats of paint continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.
- 3.6.6 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
- 3.6.7 Sand and dust between coats to remove visible defects.
- 3.6.8 Finish surfaces both above and below sight lines as specified for surrounding surfaces, including such surfaces as tops of interior cupboards and cabinets and projecting ledges.
- 3.6.9 Finish inside of cupboards and cabinets as specified for outside surfaces.
- 3.6.10 Finish closets and alcoves as specified for adjoining rooms.
- 3.6.11 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.
- 3.6.12 Wood, drywall, plaster, stucco, concrete, concrete masonry units and brick; if sprayed, must be back rolled.

3.7 Mechanical/Electrical Equipment

- 3.7.1 Paint finished area exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment with colour and finish to match adjacent surfaces, except as indicated.

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- 3.7.2 Boiler room, mechanical and electrical rooms: paint exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment.
- 3.7.3 Other unfinished areas: leave exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment in original finish and touch up scratches and marks.
- 3.7.4 Do not paint over nameplates.
- 3.7.5 Keep sprinkler heads free of paint.
- 3.7.6 Paint inside of ductwork where visible behind grilles, registers and diffusers with primer and one coat of matt black paint.
- 3.7.7 Paint fire protection piping [red] .
- 3.7.8 Paint disconnect switches for fire alarm system and exit light systems in red enamel.
- 3.7.9 Paint natural gas piping [yellow] .
- 3.7.10 Paint both sides and edges of backboards for telephone and electrical equipment before installation. Leave equipment in original finish except for touch-up as required, and paint conduits, mounting accessories and other unfinished items.
- 3.7.11 Do not paint interior transformers and substation equipment.

3.8 Site Tolerances

- 3.8.1 Walls: no defects visible from a distance of [1000 mm] at [90] degrees to surface.
- 3.8.2 Ceilings: no defects visible from [floor] at [45] degrees to surface when viewed using final lighting source.
- 3.8.3 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

3.9 Field Quality Control

- 3.9.1 Interior painting and decorating work to be inspected by a MPI Accredited Paint Inspection Agency (inspector) acceptable to specifying authority and local Painting Contractor's Association. Painting contractor will notify Paint Inspection Agency a minimum of one week prior to commencement of work and provide a copy of project painting specification, plans and elevation drawings (including pertinent details) as well as a Finish Schedule.
- 3.9.2 Interior surfaces requiring painting to be inspected by Paint Inspection Agency who will notify Consultant and General Contractor in writing of defects or problems, prior to commencing painting work, or after prime coat shows defects in substrate.

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- 3.9.3 Where "special" painting, coating or decorating system applications (i.e. elastomeric coatings) or non-MPI listed products or systems are to be used, paint or coating manufacturer will provide as part of this work, certification of surfaces and conditions for specific paint or coating system application as well as on site supervision, inspection and approval of their paint or coating system application as required at no additional cost to Consultant.
- 3.9.4 Standard of Acceptance:
 - 3.9.4.1 Walls: no defects visible from a distance of [1000 mm] at [90 degrees] to surface.
 - 3.9.4.2 Ceilings: no defects visible from [floor] at [45 degrees] degrees to surface when viewed using final lighting source.
 - 3.9.4.3 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.
- 3.9.5 Field inspection of painting operations to be carried out by independent inspection firm as designated by Consultant.
- 3.9.6 Advise Consultant when surfaces and applied coating is ready for inspection. Do not proceed with subsequent coats until previous coat has been approved.
- 3.9.7 Cooperate with inspection firm and provide access to areas of work.
- 3.9.8 Retain purchase orders, invoices and other documents to prove conformance with noted MPI requirements when requested by Consultant .

3.10 Cleaning

- 3.10.1 Progress Cleaning: clean in accordance with Section [01 74 00- Cleaning] .
 - 3.10.1.1 Leave Work area clean at end of each day.
- 3.10.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section [01 74 00- Cleaning] .
- 3.10.3 Waste Management: separate waste materials for [recycling] [reuse] in accordance with Section [01 74 19- Waste Management and Disposal] .
 - 3.10.3.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.11 Restoration

- 3.11.1 Clean and re-install hardware items removed before undertaken painting operations.
- 3.11.2 Remove protective coverings and warning signs as soon as practical after operations cease.

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- 3.11.3 Remove paint splashings on exposed surfaces that were not painted. Remove smears and spatter immediately as operations progress, using compatible solvent.
- 3.11.4 Protect freshly completed surfaces from paint droppings and dust to approval of Consultant. Avoid scuffing newly applied paint.
- 3.11.5 Restore areas used for storage, cleaning, mixing and handling of paint to clean condition as approved by Consultant.

END OF SECTION

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Washroom Accessories

1. GENERAL

1.1 Section Includes

- 1.1.1 Washroom accessories as scheduled in this Section and as indicated on the Drawings.

1.2 Related Requirements

- 1.2.1 Section 061000 - Rough Carpentry, coordination with blocking.
- 1.2.2 Section 092000 - Plaster and Gypsum Board, coordination with blocking.
- 1.2.3 Section 093000 - Tiling, coordination with layout and installation.
- 1.2.4 Section 102113 - Toilet Compartments, coordination with accessories.
- 1.2.5 Section 102814 - Baby Changing Stations, for baby changing stations.

1.3 Submittals

- 1.3.1 Product Data: Submit manufacturer's data sheets for each product specified, including the following:
 - 1.3.1.1 Installation instructions and recommendations.
 - 1.3.1.2 Storage and handling requirements and recommendations.
 - 1.3.1.3 Cleaning and maintenance instructions.
 - 1.3.1.4 Replacement parts information.
- 1.3.2 Schedule: Submit a toilet accessory schedule, indicating the type and quantity to be installed in each washroom. Use room numbers as indicated on the Drawings.

1.4 Quality Assurance

- 1.4.1 Manufacturer: Provide products manufactured by a company with a minimum of 10 years successful experience manufacturing similar products.
- 1.4.2 Single Source Requirements: To the greatest extent possible provide products from a single manufacturer.
- 1.4.3 Accessibility Requirements: Comply with requirements applicable in the jurisdiction of the project, including but not limited to ADA and ICC/ANSI A117.1 requirements as applicable.
- 1.4.4 Hazardous Materials: Comply with EU Directive "Restrictions of Hazardous Substances (RoHS) requirements."

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Washroom Accessories

1.5 Delivery, Storage, And Handling

- 1.5.1 Deliver, store and handle materials and products in strict compliance with manufacturer's instructions and recommendations. Protect from damage.

1.6 Warranty

- 1.6.1 Manufacturer's Warranty for Washroom Accessories: Manufacturer's standard 1 year warranty for materials and workmanship.
- 1.6.2 Manufacturer's Warranty for Electric Hand Dryers: Manufacturer's standard 5 year complete warranty from date of purchase.

2. PRODUCTS

2.1 Manufacturers

- 2.1.1 Refer to Drawings, Interior Materials and Finishes Schedule
- 2.1.2 Requests for substitutions will be considered in accordance with provisions of Section 01 25 00 Substitution Procedures.

3. EXECUTION

3.1 Installation

- 3.1.1 Install products in strict compliance with manufacturer's written instructions and recommendations, including the following:
 - 3.1.1.1 Verify blocking has been installed properly.
 - 3.1.1.2 Verify location does not interfere with door swings or use of fixtures.
 - 3.1.1.3 Comply with manufacturer's recommendations for backing and proper support.
 - 3.1.1.4 Use fasteners and anchors suitable for substrate and project conditions
 - 3.1.1.5 Install units rigid, straight, plumb, and level, in accordance with manufacturer's installation instructions and approved shop drawings.
 - 3.1.1.6 Conceal evidence of drilling, cutting, and fitting to room finish.
 - 3.1.1.7 Test for proper operation.

3.2 Cleaning And Protection

- 3.2.1 Clean exposed surfaces of compartments, hardware, and fittings using methods acceptable to the manufacturer.

- 3.2.2 Touch-up, repair or replace damaged products until Substantial Completion.

END OF SECTION

1. GENERAL

1.1 Related Documents

- 1.1.1 Drawings and related provisions of the Contract, apply to this Section.

1.2 Summary

- 1.2.1 This Section includes fire-suppression sprinklers, piping, equipment and relocated items:

- 1.2.1.1 Automatic sprinklers and piping.

- 1.2.2 The Contractor shall furnish all equipment, materials, tools, labor, etc. necessary for a complete fire protection system, with said systems being made ready for operation in accordance with the requirements of the authorities having jurisdiction. The purpose of these specifications is to convey to the Contractor the scope of work required, all of which the Contractor is responsible to furnish, install, adjust, and make operable. The omission by the Consultant of any necessary system component as required by the authorities having jurisdiction, in the specifications shall not relieve the Contractor of the responsibility for providing such necessity, without additional cost to the Owner. The Contractor shall visit the site before submitting his bid and shall examine all existing physical conditions which may be material to the performance of his work. No extra payments will be allowed to the Contractor as a result of extra work made necessary by his failure to do so. Any case of error, omission, discrepancy or lack of clarity shall be promptly identified to the Peel Regional Police and Consultant for clarification prior to the bid due date.

- 1.2.3 The Contractor shall provide all devices and equipment required by these specifications. The Contractor shall furnish and install additional devices to meet future requirements that may be required prior to Fire Prevention permit review of the fire protection systems. Under no circumstances will the Contractor delete any equipment or devices without the written directive of the Consultant.

- 1.2.4 The contractor is responsible for the demolition of all existing sprinkler system piping and accessory including the removal and disposal of all items unless other noted on the drawings as existing to remain.

1.3 System Abbreviations And Definitions

- 1.3.1 AFF: Above Finished Floor
- 1.3.2 AHJ: Authority Having Jurisdiction.
- 1.3.3 Approved: Unless otherwise stated, materials, equipment or submittals approved by ULC and FM.
- 1.3.4 ANSI: American National Standards Institute.
- 1.3.5 ASTM: American Society for Testing and Materials.

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- 1.3.6 AWS: American Welding Society.
- 1.3.7 Concealed: Where used in connection with installation of piping or conduit and accessories, shall mean "hidden from sight" as in shafts, furred spaces, in soffits or above suspended ceilings.
- 1.3.8 Consultant/Engineer: Norris Fire Consulting Inc (NFC)
- 1.3.9 Contractor: The company awarded the contract for this work and any of its subcontractors, vendors, suppliers or fabricators.
- 1.3.10 DP: Dry pendent sprinkler.
- 1.3.11 EC: Extended coverage sprinkler.
- 1.3.12 ELO: Extra-large orifice sprinkler.
- 1.3.13 ESFR: Early suppression, fast response sprinkler.
- 1.3.14 Exposed: Where used in connection with installation of piping or conduit and accessories, shall mean "visible" or "not concealed."
- 1.3.15 FM: Factory Mutual.
- 1.3.16 FM Approved: Materials or equipment approved by Factory Mutual and included in the most recent edition of the FM Approval Guide.
- 1.3.17 FP: Fire Protection.
- 1.3.18 Furnish: Supply materials.
- 1.3.19 Install: Install materials, mount and connect equipment or assemblies.
- 1.3.20 NEMA: National Electrical Manufacturers Association
- 1.3.21 NFPA: National Fire Protection Association.
- 1.3.22 Owner: YYC 288 c/o Crossbridge Management
- 1.3.23 PIV: Post indicating valve.
- 1.3.24 Provide: Furnish, install and connect.
- 1.3.25 PSI: Pounds per square inch.
- 1.3.26 QR: Quick response sprinkler.
- 1.3.27 Remove: Remove material and equipment and restore surface.
- 1.3.28 ULC: Underwriters Laboratories of Canada.
- 1.3.29 ULC Listed: Materials or equipment listed by ULC and included in the most recent edition of the ULC Directory.

1.4 Codes And Standards

- 1.4.1 NFPA Standards:
 - 1.4.1.1 NFPA 13, "Installation of Sprinkler Systems" 2013 Edition
- 1.4.2 Local Codes:

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1.4.2.1 OBC, "Ontario Building Code", 2012 Edition as amended

1.4.2.2 OFC, "Ontario Fire Code", 2015 Edition.

1.5 System Performance Requirements

1.5.1 Install the sprinkler systems according to the criteria set forth herein and as shown in the drawings.

1.5.2 Complete automatic sprinkler system as outlined in these specifications, including all labor, materials and shop drawings needed to provide an operating system, and all of the following:

1.5.2.1 Pipe and fittings.

1.5.2.2 Hangers and Supports.

1.5.2.3 Ceiling and wall plates.

1.5.2.4 Sprinklers, escutcheons, and guards. Include sprinkler flow characteristics, mounting, finish, and other pertinent data.

1.5.2.5 Shop drawings, device manufacturer's literature, and samples.

1.5.2.6 Contractor's Material and Test Certificates and as-built drawings.

1.5.2.7 Contractor is to supply all equipment necessary to access all areas of the building including high ceilings to complete modification of the sprinkler system.

1.5.3 Components and Installation: Capable of producing piping systems with 175 psig minimum working pressure rating, unless otherwise indicated. Fire protection products shall be installed in accordance with their ULC listing, FM Approval and the manufacturer's requirements.

1.5.4 Fire protection products shall be installed in accordance with their ULC listing, FM Approval and the manufacturer's requirements.

1.5.5 Fire Stopping penetrations in accordance with contract documents.

1.5.6 Prepare and submit shop drawings, maintenance manuals, and other submittals to demonstrate performance compliance and to obtain necessary permits and approvals.

1.5.7 Follow equipment manufacturer guidelines for wiring installation. The Owner will not be responsible for added cost and changes due to additional manufacturer's requirements.

1.5.8 Supply, install, pipe, test, commission and verify all piping provided to achieve intended operation.

1.6 Design Criteria

1.6.1 Refer to FP drawings for design criteria.

1.7 Submittals

- 1.7.1 Submit three (3) copies of shop drawings within five (5) working days of award of contract. Do not commence installation prior to receipt of reviewed shop drawings. Do work in accordance with reviewed shop drawings only. Shop drawings shall include but not be limited to the following:
- 1.7.2 An approved submittal shall be maintained on site for the duration of the project. This set of drawings shall be used to track any field changes that may occur. The tracked changes shall then be incorporated into a complete set of "As-Built" drawings that shall be submitted at the close of the project.
- 1.7.3 Product Data: For the following:
 - 1.7.3.1 Pipe and fitting materials and methods of joining for sprinkler piping. Including welded outlets.
 - 1.7.3.2 Pipe hangers and supports.
 - 1.7.3.3 Sprinklers and accessories
 - 1.7.3.4 Sprinklers, escutcheons, and guards. Include sprinkler flow characteristics, mounting, finish, and other pertinent data.

1.8 Contract And Record Drawings

- 1.8.1 Contractor shall maintain on site a set of contract drawings and reviewed shop drawings. All deviations shall be clearly marked on the contract drawings or the shop drawings as applicable. Record Drawings shall not be used for construction purposes.
- 1.8.2 Record Drawings shall be kept up to date and be available for Consultant's review at all times. The status of the Record Drawings will be considered on approval of progress payments.
- 1.8.3 Upon completion of the work, the Record Drawings shall be used to prepare a complete and accurate final set of drawings completed by the Consultant. Submit final set of the Record Drawings, hard copies and scan pdf files to Consultant for review.
- 1.8.4 Base the installation on actual field survey and account for all, structural, heating and air conditioning, plumbing, and electrical interference.

1.9 Maintenance Manuals

- 1.9.1 Manuals shall contain the following:
 - 1.9.1.1 As-built drawings of the sprinkler system.

1.10 Quality Assurance

- 1.10.1 Installer Qualifications: An experienced installer possessing a Certificate of Qualification by the Ontario College of Trades as a "Sprinkler and Fire Protection Installer Trade" and apprentices

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working under direct supervision "Sprinkler and Fire Protection Installer Trade" and have installed fire-sprinkler piping similar to that indicated for this Project.

- 1.10.2 Engineering Responsibility: Preparation of working plans and calculations by Consultant.
- 1.10.3 Manufacturer Qualifications: Firms whose equipment, specialties, and accessories are listed by product name and manufacturer in ULC's "Fire Protection Equipment List of Equipment and Materials" or FM's "Approval Guide" and that comply with other requirements indicated in these specifications.
- 1.10.4 Sprinkler Components: Listing/approval stamp, label, or other marking by a testing agency acceptable to AHJ.
- 1.10.5 NFPA Standards: Equipment, specialties, accessories, installation, and testing complying with the referenced codes and standards.

2. MATERIALS

2.1 General

- 2.1.1 All components not referenced by NFPA 13, shall be ULC listed or FM approved. Components shall be used in accordance with the manufacturer's recommendations and its ULC listing and FM approval. Where a component has separate minimum requirements for the ULC listing and FM Approval the FM Approval criteria shall be used.
- 2.1.2 The naming of manufacturers in the specifications shall not be construed as eliminating the materials, products or services of other manufacturers and suppliers providing approved equivalent items.
- 2.1.3 The substitutions of materials or products other than those named in the specifications are subject to proper approval of the Owner granted in writing.

2.2 Sprinklers

- 2.2.1 Acceptable Manufacturers
 - 2.2.1.1 Acceptable Fire Sprinkler Manufacturer: Tyco or Viking. Refer to FP drawings to types and locations.
- 2.2.2 Provide only new sprinklers of current model and manufacture date. Do not provide any sprinkler included in a recall program. Do not provide any sprinkler with an O-ring seal.

2.3 Piping Material

- 2.3.1 Pipe shall be new, designed for 175 psi working pressure, conforming to ASTM specifications, and have the manufacturer's name and brand along with the applicable ASTM standard marked on each length of pipe.

- 2.3.1.1 Steel: Steel piping shall be black or galvanized.
- 2.3.1.2 Standard Wall: Overhead pipe used shall be black steel or galvanized and must comply with the specifications of the American Society for Testing and Materials, ASTM A 795 for black pipe, and hot dipped zinc coated galvanized welded and seamless steel pipe for fire protection use. Dimensions for all overhead pipe must be in accordance with the American Standard for Wrought Steel and Wrought Iron Pipe ANSI B36.10-1975 for pressure up to 300 psi. Schedule 40 pipe is considered "standard wall" pipe. Standard wall pipe ends shall be welded, threaded, cut grooved or plain end.
- 2.3.1.3 Pipe and preparation shall conform to the fitting manufacturer's recommendations.

2.4 Pipe Fittings

- 2.4.1 Changes of direction shall be accomplished by the use of fittings suitable for use in sprinkler systems and defined in NFPA 13.
 - 2.4.1.1 Steel Pipe:
 - 2.4.1.1.1 Roll Grooved fittings and couplings shall be produced by the same manufacturer.
 - 2.4.1.1.2 Roll Grooved couplings shall be dimensionally compatible with pipe.

2.5 Joining Materials

- 2.5.1 In accordance with NFPA 13, 14 requirements.

2.6 Hangers And Supports

- 2.6.1 In accordance with NFPA 13 requirements.
- 2.6.2 Sprinkler piping hangers shall not be hung from or attached directly to metal roof decking. No holes shall be made that penetrate through the roof deck for hanger support. All ceiling level sprinklers shall be supported from the top chord of the roof structural steel members or concrete anchors for masonry ceiling types.
- 2.6.3 Sprinkler piping hangers are permitted to be hung from the concrete ceiling slab structure with drop in anchor, powder actuated anchors shall not be used.
- 2.6.4 Do not reuse existing sprinkler hangers, all sprinkler hangers are to be provided as new.

2.7 Sleeves For Wall/Floor Penetrations

- 2.7.1 Sleeves through walls and floors shall be made watertight and fire stopped.

3. EXECUTION

3.1 Preparation

- 3.1.1 Immediately after award of contract, obtain an electronic file of the fire protection design drawings and a copy of the project's sprinkler system hydraulic calculations. Use these for preparing the working drawings and final calculations. Consultant will provide drawings and calculations files.
- 3.1.2 Make no changes in installation from the layout shown on the "FP" sheets, unless change is specifically approved by NFC. This does not include minor revisions for the purpose of coordination and fabrication.
- 3.1.3 Report any discrepancy between the FP drawings and these specifications to the Consultant. Obtain immediate clarification on any item pertaining to this project from the Consultant.

3.2 Piping Applications

- 3.2.1 Flanges, unions, and transition and special fittings with pressure ratings the same as or higher than system pressure rating may be used in aboveground applications, unless otherwise indicated.
- 3.2.2 Use pipe sizes 10-inch or smaller for interior applications.
- 3.2.3 Use only black steel pipe, Schedule 10 or heavier for interior applications for wet pipe systems. Do not use threaded thinwall or lightwall piping.
- 3.2.4 Do not use plain-end fittings, plain-end couplings or clamp fittings. Use only welded outlets or screwed fittings at sprinklers. For all other applications, use roll-grooved, threaded, welded or flanged connections, using ULC listed and FM approved fittings and couplings.
- 3.2.5 With threaded fittings or cut-groove fittings and couplings, use not less than Schedule 40 thickness pipe up to and including 8-inch pipe. Use minimum Schedule 10 pipe for roll-grooved pipe and fittings or welded fittings in sizes up to and including 5-inch, with wall thickness of 0.134 inch for 6-inch pipe and 0.188 inch for 8-inch pipe.
- 3.2.6 The schedule of piping installed shall match the hydraulic calculations that are submitted to and approved by the AHJ.
- 3.2.7 Piping between Fire Department Connections and Check Valves: Use galvanized, standard-weight steel pipe; and galvanized screwed or grooved fittings.

3.3 Joint Construction

- 3.3.1 Refer to NFPA 13 for basic piping joint construction.

3.4 Piping Installation, General

- 3.4.1 Locations and Arrangements: Drawing plans, schematics, and diagrams indicate general location and arrangement of piping. Install piping as indicated, as far as practical.
 - 3.4.1.1 Deviations from approved working plans for piping require written approval from AHJ. File written approval with the Consultant before deviating from approved working plans.
- 3.4.2 Use approved fittings to make changes in direction, branch takeoffs from mains, and reductions in pipe sizes.
- 3.4.3 Patching and Repairs: Repair galvanizing and other protective coatings on pipe and fittings, damaged during fabrication or installation.

3.5 Sprinkler Piping Installation

- 3.5.1 Type of sprinkler piping installed throughout the building shall meet the requirements of Section 3.2.
- 3.5.2 Install all piping in a neat and workmanlike manner, with all pipe hung true to line and grade.
- 3.5.3 Correct sizing of piping and accessories is the responsibility of the sprinkler contractor; however, sizes shall match those shown on the plans and in the calculations.
- 3.5.4 The contractor shall be responsible for installing the piping at the elevation indicated on the sprinkler drawings. Sprinkler contractor shall coordinate all the conflicts (electrical, mechanical, structural).
- 3.5.5 Sprinkler guards are to be installed on all sprinklers less than 8'-0" (2438mm) above finish floor to the ceiling. Sprinkler guards shall consist of red protective cages.
- 3.5.6 Coordinate sprinkler locations to avoid obstructions that restrict their discharge, such as lighting, bulkheads, bar joists, joist strapping, cross bridging, girders, roof top units (RTUs), cable trays, conduit banks, drains etc.. Make every effort possible to avoid these obstructions.

3.6 Specialty Sprinkler Fitting Installation

- 3.6.1 Install specialty sprinkler fittings according to manufacturer's written instructions.

3.7 Field Quality Control

- 3.7.1 Flush, test, and inspect sprinkler piping as provided by NFPA 13. Provide advance notification of date and time of tests to permit witnessing of tests by the Owner, the Construction Manager, the Consultant and the AHJ. Properly dispose of water used in flushing and testing.

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- 3.7.2 Limit leakage in accordance with NFPA 13 requirements. Repair or replace piping system components that do not pass test procedures and retest to demonstrate compliance. Repeat procedure until satisfactory results are obtained.
- 3.7.3 Do not use additives, corrosive chemicals (sodium silicate or derivatives thereof), brine, "Stop Leak," or other chemicals while carrying out hydrostatic tests or for stopping leaks.
- 3.7.4 In addition to the standard hydrostatic test, carry out an air pressure leakage test at 40 psi for 24 hours. Correct loss of pressure in excess of .01 bar for the 24-hour period.
- 3.7.5 Report test results promptly and in writing to the Owner and Consultant.

3.8 Cleaning

- 3.8.1 Clean dirt and debris from sprinklers, pipe and fittings.
- 3.8.2 Remove coverings provided for protection during painting.
- 3.8.3 Remove and replace sprinklers having paint other than factory finish.

3.9 Protection

- 3.9.1 Protective Caps shall remain installed on all sprinklers subject to damage from other trades during construction.

3.10 Commissioning

- 3.10.1 Verify that specified tests of piping are complete.
- 3.10.2 Verify that damaged sprinklers and sprinklers with paint or coating not specified are replaced with new, correct type.
- 3.10.3 Verify that sprinklers are correct types, have correct finishes and temperature ratings, and have guards as required for each application.

END OF SECTION

1. OPERATION AND MAINTENANCE OF PLUMBING SYSTEMS

1.1 Verification Of Operation Of Existing Systems

- 1.1.1 Before start of construction, complete a plumbing review of all existing plumbing piping to remain. Submit report of deficiencies to Landlord and the Mechanical Engineer.

1.2 Qualified Tradesmen

- 1.2.1 Work to be done by qualified and recognized firm with an established reputation in this field using tradesmen holding certificates of competency.
- 1.2.2 Contractors performing work on natural gas systems to be licensed as a gas and propane installer under O.Regg. 215/01, by the Technical Standards and Safety Authority.

2. CODES & STANDARDS

2.1 References

- 2.1.1 Ontario Building Code, Division B, Part 7 - Plumbing.
- 2.1.2 Regulations of province, city, or local authority having jurisdiction.
- 2.1.3 O.Reg. 212/01 Gaseous Fuels, and related code adoption document.
- 2.1.4 O.Reg. 215/01 Fuel Industry Certificates
- 2.1.5 CSA B149.1 Natural Gas And Propane Installation Code
- 2.1.6 CSA-B45 series, Plumbing Fixtures.
- 2.1.7 CSA-B125 Plumbing Fittings.
- 2.1.8 CSA B158.1 Cast Brass Solder Joint Drainage, Waste, And Vent Fittings
- 2.1.9 ASTM B88 Standard Specification For Seamless Copper Water Tube
- 2.1.10 ASME B16.15 Cast Bronze Threaded Fittings, Classes 125 and 250
- 2.1.11 ASME B16.18 Cast Copper Alloy Solder Joint Pressure Fittings
- 2.1.12 ASME B16.22 Wrought Copper And Copper Alloy Solder Joint Pressure Fittings
- 2.1.13 ASME B16.24 Cast Copper Alloy Pipe Flanges And Flanged Fittings; Class 150, 300, 400, 600, 900, 1500, & 2500.
- 2.1.14 ASME B16.29 Wrought Copper And Wrought Copper Alloy Solder Joint Drainage Fittings – DWV
- 2.1.15 ASTM B-32 Specification For Solder Metal
- 2.1.16 ASTM B306 Standard Specification For Copper Drainage Tube (DWV)

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- 2.1.17 ASTM B828 Standard Practice For Making Capillary Joints By Soldering Of Copper And Copper Alloy Tube And Fittings.
- 2.1.18 AWS A5.8 Brazing Filler Metal.
- 2.1.19 AWWA C111/ ANSI A21.11 Standard For Rubber-Gasket Joints For Ductile-Iron Pressure Pipe And Fittings

3. PIPING INSTALLATION

3.1 Piping

- 3.1.1 Piping system routing is shown diagrammatically. Locate mains, risers and runouts concealed behind furrings or above ceilings except in mechanical equipment rooms and access spaces where piping is to be exposed.
- 3.1.2 Anchor, guide and support vertical and horizontal runs of piping to resist dead load and absorb thrust.
- 3.1.3 Install piping close to building structure to minimize furring and conserve headroom. Group piping and run parallel to walls and ceilings.
- 3.1.4 Cut tube square, ream tube ends and clean tubing and tube ends before joint assembly.
- 3.1.5 Before assembling solder or brazed joints, remove working parts of valves, clean inside of solder fittings and outside of mating pipe with emery paper and coat with flux.
- 3.1.6 Solder or braze joints with blow torch or oxy-acetylene flame.
- 3.1.7 Joint construction, above ground:
 - 3.1.7.1 Up to NPS 2½": soldered in all locations
- 3.1.8 Domestic Cold and Hot Water System Distribution
 - 3.1.8.1 Provide domestic cold water system with
 - 3.1.8.1.1 Distribution pipe and fittings,
 - 3.1.8.1.2 Valved connections from supply systems,
 - 3.1.8.1.3 Appliance backflow protection.
- 3.1.9 Drainage
 - 3.1.9.1 Provide waste and vent connections to plumbing fixtures and equipment.
 - 3.1.9.2 Fittings:
 - 3.1.9.2.1 Do not use double hubs, straight crosses, double t's, or double ty's in soil or waste pipe below any fixture.
 - 3.1.9.2.2 Do not use branch fittings other than full "Y" or "Y" and an eighth bend, on soil or waste pipe running in horizontal direction.

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3.1.9.2.3 Do not use quarter bend placed on its side.

3.1.9.2.4 Do not use inverted joints below fixtures.

3.1.10 Pressure test piping before insulation is applied. Cut-out and replace leaking soldered or brazed fittings and retest.

4. PIPING, PLUMBING FIXTURES AND ACCESSORIES

4.1 Domestic Hot And Cold Water Piping, Within Building

4.1.1 Copper tube: to ASTM B88.

4.1.1.1 Hard drawn, type L above ground.

4.1.1.2 Soft annealed, type K below ground.

4.1.2 Tube to have certification markings made by testing agency accredited by Standards Council of Canada.

4.2 Copper Drain Waste And Vent Pipe And Fittings, Within Building

4.2.1 Pipe:

4.2.1.1 Copper DWV tube, to ASTM B306

4.2.2 Tube to have certification markings made by testing agency accredited by Standards Council of Canada.

4.3 Joints

4.3.1 Flanged joints:

4.3.1.1 made up with rubber gaskets 1.6 mm (1/16 in) thick to AWWA C111 and

4.3.1.2 heavy series bolts, hexagonal head pattern to ASTM A307, nuts to ASTM 563, and washers.

4.3.2 Solder : tin antimony solder, 95:5 to ASTM B-32 .

4.3.3 Silver brazing alloy AWS Classification BCUP-5

4.3.3.1 Standard of Acceptance

4.3.3.1.1 Handy Harman "SIL-FOS"

4.3.3.1.2 All-State Welding Alloys "SILFLO 15"

4.4 Ball Valves

4.4.1 1000 kPa (150 psi), two piece bronze body and chrome plated bronze ball, PTFE seat rings, solder joint or NPT to copper adapters, full port.

4.4.2 Handle extensions suitable to clear 50 mm (2 in) pipe insulation thickness.

4.4.2.1 Standard of Acceptance

4.4.2.1.1 Kitz 59(soldered)

4.4.2.1.2 Kitz 58 (threaded)

- 4.4.2.1.3 Crane 9322 (soldered)
- 4.4.2.1.4 Crane 9302 (threaded)
- 4.4.2.1.5 Jenkins 202J (soldered)
- 4.4.2.1.6 Jenkins 201J (threaded)

4.5 'B-1' WALL HUNG BASIN ELECTRONIC TOUCHLESS FAUCET THERMOSTATIC MIXING VALVE:

- 4.5.1 AMERICAN STANDARD #0954004EC.000 'MURRO' universal design wall-hung lavatory sink, white finish complete with vitreous china shroud/kneed contact guard #0059.020ec.020.
- 4.5.2 DELTA #591T0228TR, electronic faucet hardwired complete with Delta faucet control box #ELAVT0008ARI. Control box shall be complete with thermostatic mixing valve.
- 4.5.3 OS&B #370 open grid drain complete with #4831-6 17 gauge tailpiece.
- 4.5.4 MCGUIRE #LFH170BV, polished brass faucet supplies.
- 4.5.5 Provide OS&B #95-7.5 P-trap.
- 4.5.6 Provide tee, adaptors and flex. copper tubing to suit installation.
- 4.5.7 Provide hardwire transformer Delta #RP32508, 24VAC, 20VA
- 4.5.8 Watts WCA-411-CA-481 carrier - WCA-411/WCA-411-WC, lavatory carrier, for concealed arm carrier, adjustable arms, epoxy coated cast iron, wall mounted steel support plate with plated hardware (for mounting of knee shroud).

4.6 'B-2' WALL HUNG BASIN ELECTRONIC FAUCET W/ THERMOSTATIC MIXING VALVE:

- 4.6.1 AMERICAN STANDARD #0355.027 'LUCERNE' wall-hung lavatory, white finish.
- 4.6.2 DELTA #591T0228TR, electronic faucet hardwired complete with Delta faucet control box #ELAVT0008ARI. Control box shall be complete with thermostatic mixing valve.
- 4.6.3 OS&B #370 open grid drain complete with #4831-6 17 gauge tailpiece.
- 4.6.4 MCGUIRE #LFH170BV, polished brass faucet supplies.
- 4.6.5 MCGUIRE PW2125WC P-trap - molded closed cell vinyl (anti-microbial) wrapped cast brass, glossy white, with cleanout
- 4.6.6 Provide tee, adaptors and flex. Copper tubing to suit installation.
- 4.6.7 Provide hardwire transformer Delta #RP32508, 24VAC, 20VA
- 4.6.8 WATTS WCA-411 carrier - WCA-411/WCA-411-WC, lavatory carrier, for concealed arm carrier, adjustable arms, epoxy coated cast iron.

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4.7 'SH-1' SHOWER, SHOWER HEAD - BARRIER-FREE:

- 4.7.1 DELTA #T17TH155 'TECK' T17TH series - Multichoice universal thermostatic shower system, stainless steel grab bar with adjustable slide, polished chrome finish, Tempassure 17T thermostatic cartridge, ADA compliant metal lever volume control handle, field adjustable temperature dial, hand shower with push button pause.
- 4.7.2 Provide Multichoice universal tub / shower rough-in - universal inlets / outlets #R10000-UNWS. Maximum temperature setting for incoming hot water shall be 120°F or less.

4.8 'SH-2' SHOWER, SHOWER HEAD:

- 4.8.1 DELTA #T17TH135 'TECK' T17TH series - Multichoice universal thermostatic shower system, polished chrome finish, Tempassure 17T thermostatic cartridge, ADA compliant metal lever volume control handle, field adjustable temperature dial, touch clean shower head, arm and flange.
- 4.8.2 Provide Multichoice universal tub / shower rough-in - universal inlets / outlets #R10000-UNWS. Maximum temperature setting for incoming hot water shall be 120°F or less.

4.9 'WC-1' FLOOR MOUNTED TOILET - BARRIER-FREE VITREOUS CHINA:

- 4.9.1 AMERICAN STANDARD 3461.001 toilet 'MADERA FLOWISE' - Floor mounted, top spud, combination toilet and flush valve, vitreous china, white finish, toilet, elongated bowl.
- 4.9.2 ZURN #ZEMS6000AV-IS-WS1 hardwire automatic sensor flush valve complete with Aquasense #P6000-HW6 7.6 VDC hardwired power converter.
- 4.9.3 CENTOCO 820STS-001 seat - for elongated bowl, open front, polypropylene, toilet seat, with seat cover, and commercial grade hinges, white finish.
- 4.9.4 MCGUIRE LFH166LK supply - lead free, premiere heavy loose supply, chrome plated, 3/8" (9.5 mm) IPS x 3/8" (9.5mm) outer ø heavy stop valve, 12" (304 mm) steel braided risers, convertible loose key handle.

4.10 'WC-2' FLOOR MOUNTED TOILET - VITREOUS CHINA:

- 4.10.1 AMERICAN STANDARD 3451.001 toilet 'MADERA FLOWISE' - floor mounted, top spud, combination toilet and flush valve, vitreous china, white finish, toilet, elongated bowl.
- 4.10.2 ZURN #ZEMS6000AV-IS-WS1 hardwire automatic sensor flush valve complete with Aquasense #P6000-HW6 7.6 VDC hardwired power converter.

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- 4.10.3 CENTOCO 500STSCC-001 seat - for elongated bowl, open front only, polypropylene, toilet seat, no seat cover, and commercial grade hinges, white finish.
- 4.10.4 MCGUIRE LFH166LK supply - lead free, premiere heavy loose supply, chrome plated, 3/8" (9.5 mm) IPS x 3/8" (9.5 mm) outer ø heavy stop valve, 12" (304 mm) steel braided risers, convertible loose key handle.

4.11 'FD' FLOOR DRAIN - FINISHED AREA:

- 4.11.1 WATTS FD-104T-C-L5-1 floor drain - epoxy coated cast iron, floor drain, adjustable square 13 mm (1/2") thick reinforced top, 102 mm (4") pipe size, threaded outlet, 127 mm (5") square nickel bronze strainer, trap primer connection with plug.

4.12 'TSPV' ELECTRONIC TRAP SEAL PRIMER VALVE (FOR FLOOR DRAINS 'FD'):

- 4.12.1 SIOUX CHIEF #695-ES01 or equal, 120V, 9.2W complete with 5-way Splitter. Connect trap seal primer valve to cold water line.
- 4.12.2 Install trap seal primer valve as per manufacturer's instruction.

END OF SECTION

1. OPERATION AND MAINTENANCE OF HVAC SYSTEMS

1.1 Verification Of Operation Of Existing Systems

- 1.1.1 Before start of construction, complete a mechanical review of all existing HVAC equipment to remain (rooftop units, unit heaters, control valves, thermostats, and controls). Submit report of deficiencies to Consultant and Owner. All deficiencies should be rectified before air balancing work commences.

1.2 HVAC Air-Distribution System Cleaning (After Construction Has Been Completed)

- 1.2.1 Perform vacuum pressure duct cleaning of all existing ducts to be reused, including main supply and return ducts, branch ducting and exhaust ducting.
- 1.2.2 Clean new, existing to remain, and relocated grilles and diffusers to remove dirt, dust, and fingerprints.
- 1.2.3 Clean and recalibrate all new and existing thermostats.
- 1.2.4 Vacuum and clean existing HVAC equipment that is to be reused including wall-fin heaters, cabinets, heaters, induction units etc.

1.3 Operation And Maintenance Of Decentralized HVAC Equipment

- 1.3.1 Rebalance primary air quantities in induction units to Base Building design – refer to Base Build Drawings and maintenance manuals.

2. COMMON WORK RESULTS FOR HVAC

2.1 References

- 2.1.1 Ontario Building Code, Division B, Part 6 – HVAC.

2.2 Common Motor Requirements For Hvac Equipment

- 2.2.1 Supply starts, disconnects, relays, etc. for all equipment i.e. pumps fans etc. Turn over to Electrical Contractor for installation.
- 2.2.2 Supply low voltage step-down transformers as required. Turn over to Electrical Contractor for installation.

2.3 Hangers And Supports For Hvac

- 2.3.1 Tie wire or perforated metal strap hangers will not be accepted.
- 2.3.2 Concrete Inserts
- 2.3.2.1 Use inserts placed in pre-drilled holes. Do not use powder driven inserts or self-drilling inserts. Before drilling holes, accurately locate all reinforcing bars in the affected areas using an electro-magnetic locator.

- 2.3.2.2 Do not drill through or otherwise damage reinforcing bars. If reinforcing is encountered, the inserts must be relocated. Ensure that hole diameter, depth of penetration, spacing, etc., are in strict accordance with the insert manufacturer's recommendations for the specific insert type and load condition.

2.3.3 Floor supports

- 2.3.3.1 Provide a 150 mm (6 inch) high concrete housekeeping pad for floor mounted HVAC equipment such as pumps, tanks, etc.

2.3.4 Pipe hangers and supports

- 2.3.4.1 Manufacturers: Avil International, Crane, Adisco, or approved equal.
- 2.3.4.2 Hangers for Pipe Sizes 50 mm and Over: Carbon steel, adjustable, clevis.
- 2.3.4.3 Hangers Rods: Hot-dipped galvanized steel threaded both ends, threaded one end, or continuous threaded.
- 2.3.4.4 Upper attachments for existing concrete:
 - 2.3.4.4.1 Provide any additional supports required from existing concrete construction for any piping or equipment by drilling same and installing expansion anchors. Do not install in uncured concrete.

2.3.5 Vibration applications:

- 2.3.5.1 Provide any additional supports required from existing concrete construction for any equipment subject to vibration by drilling same and installing chemical epoxy adhesive threaded rod anchors.
- 2.3.5.2 Do not install in uncured concrete
- 2.3.5.3 Do not use explosive drive pins in any Section of Work without obtaining prior approval.

2.4 Identification For HVAC

- 2.4.1 Identify all equipment with engraved phenolic nameplates, secured in place with rivets. For valve tags, install with chain.
- 2.4.2 Identify HVAC piping in accordance with base building standards.

2.5 Testing, Adjusting, And Balancing For HVAC

- 2.5.1 General
 - 2.5.1.1 Submit balancing reports to Consultant for review.
- 2.5.2 Air systems

- 2.5.2.1 Employ the services of the Owner approved air balancing company to balance the air systems to achieve the airflow shown and submit a complete report. Acceptance of balancing and report will be subject to on site verification and spot checking. Allow 2 hours of balancing work for site spot checking.
- 2.5.2.2 Provide all necessary balancing of volume dampers as shown on drawing. Balance the air system(s) to air volumes shown. Submit a copy of balancing report to the Consultant. Air balancing must be performed by a firm who is a member of Associated Air Balance Council (AABC) or National Environmental Balancing Bureau (NEBB). All balancing to be completed and dampers locked in place.
- 2.5.2.3 Indicate all test results including air flow rates, air velocity, closets and furthest outlet supply air temperatures, deficiency summary, and room temperatures.
- 2.5.2.4 Balance each air handling system, and air quantities per outlet listed in the balancing report. Clean or replace filters and leave systems in clean operating condition.
- 2.5.2.5 Test and balance air system such that air quantities at each outlet, grille and register are within 5% of design figures. Adjust fan speeds, splitter and balancing dampers to achieve these results. Prepare and submit a final balancing report for review by the Mechanical Consultant.
- 2.5.2.6 Testing and balancing of air handling systems shall be under supervision of qualified personnel. Balancing and testing shall be performed by trained personnel with records kept of each trial balance for supervision and review.
- 2.5.2.7 If spot checking systems reveals actual air quantities do not agree with air balance report, this Section will be called upon to completely rebalance systems until satisfactory, without extra remuneration.
- 2.5.2.8 Provide a minimum of 6 hours of additional air balancing work that should be performed one month (or as indicated on drawings) after the Owner has moved in for "comfort balancing".

3. HVAC INSULATION

3.1 Insulation Value

- 3.1.1 Insulation R-Values in accordance with ASHRAE 90.1-2010

3.2 Acoustic Insulation For Ducts

- 3.2.1 Provide where indicated for equipment and in all transfer air ducts.

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- 3.2.2 12.7 mm (1/2 inch) thick internal lining c/w factory applied black acrylic polymer coating, having a flame spread rating of 25 or less and smoke development classification of 50 or less.
- 3.2.3 Johns Manville Permacote Linacoustic standard/HP or equivalent.
- 3.2.4 Seal all cut edges to avoid any airborne fibres.

3.3 Thermal Insulation For Ducts

- 3.3.1 Blanket or rigid thermal insulation on indoor as follows unless otherwise indicated:
 - 3.3.1.1 Insulate full length of outdoor air supply ducts with 2" thick insulation.
 - 3.3.1.2 Insulate first 3 m (10 feet) of exhaust or ERV ducts from exterior wall or roof with 2" thick insulation.
 - 3.3.1.3 Insulate full length of supply and return ducts that are routed through a non-conditional space.
 - 3.3.1.4 Thermal insulation is not required for return air ducts confined within a conditional space.
 - 3.3.1.5 Acoustically lined interior ducts need not to be thermally insulated.
 - 3.3.1.6 Use rigid insulation and drywall type corner beads in areas where insulation is easily susceptible to damage.
- 3.3.2 Insulation: foil faced, flame spread rating of 25 or less, smoke development classification of 50 or less.
- 3.3.3 Thermal insulation: 38 mm (1-1/2 inch) thick blanket mineral fiber or 25.4 mm (1 inch) thick rigid mineral fiberboard for warm air ducts.
- 3.3.4 Thermal insulation for cold air ducts: 38.1 mm (1-1/2 inch) thick rigid insulation, or 50.8 mm (2 inch) thick blanket mineral fiber.
- 3.3.5 Vapour-retarder membrane shall be installed with insulation on cold, dual-temp, and outdoor air ducts.
- 3.3.6 Acceptable blanket mineral fiber: John Manville microlite duct wrap type 100, or equivalent.
- 3.3.7 Acceptable rigid mineral fiberboard: John Manville 800 series spin-glass type, or equivalent.
- 3.3.8 Seal all joints with ULC listed self-adhesive insulation tape for indoor ducts and insulation.
- 3.3.9 Use rigid insulation and drywall type corner beads in areas where insulation is easily susceptible to damage.
- 3.3.10 Cover exterior ductwork insulation with 1.016mm (0.04 inch) thick aluminum jacket (forming the double skin). Form all longitudinal seams along the bottom. Ensure that aluminum jacket is fastened with

secure, watertight, mechanical connections. Apply exterior grade sealant at all seams.

- 3.3.11 For exposed ductwork in interior areas, cover insulation with canvas and lagging cement.

3.4 ACR Refrigerant Tubing

- 3.4.1 all ACR tubing, flexible foam elastomeric is to be closed cell, sleeve type, longitudinally split self-seal, foamed plastic pipe insulation with a water vapour transmission rating of 0.10 in accordance with ASTM E96, procedure B, and required installation accessories. Acceptable products are:
- 3.4.1.1 Armacell ap/Armaflex SS;
- 3.4.1.2 IK insulation group K-flex "1S" self-seal pipe insulation.
- 3.4.2 For outdoor ACR tubing, install sectional weather-proof jacketed pipe insulation in strict accordance with manufacturer's instructions to produce a water-tight weather-proof installation. Insulate fittings with blanket type glass fibre insulation of a thickness and insulating value equal to the sectional insulation and secured in place with adhesive and wire. Jacket fittings with manufactured aluminium fitting covers sealed water-tight.
- 3.4.3 Install flexible elastomeric pipe insulation in strict accordance with manufacturer's published instructions to suit the application, and using adhesive, joint sealants and finish to produce a water-tight installation. Insulate refrigerant suction and hot gas with 1" (25mm) flexible elastomeric pipe insulation.

4. INSTRUMENTATION AND CONTROL FOR HVAC

4.1 Control Wiring

- 4.1.1 All controls work shall be performed by the Owner's approved controls contractor approved by the Owner.
- 4.1.2 All control wiring shall be plenum-rated.
- 4.1.3 Control wiring shall be installed neatly tight to the underside of structure.
- 4.1.4 250 volt rated, minimum #18 AWG stranded multiconductor cable, FT6/CMP rated.
- 4.1.5 Provide all control wiring in conduit regardless of voltage in accordance with Division 26.
- 4.1.6 All control wiring (low voltage) shall be carried out by the mechanical contractor; power wiring (line voltage) shall be by the electrical contractor.
- 4.1.7 Provide all controls, EMT conduit, fittings, and wiring including appurtenances necessary for complete and operating control

systems. Provide all necessary control air piping/wiring from existing control mains to room thermostats, control valves, dampers, and other control devices as necessary for a complete and functional system. Control piping shall be type 'L' copper tubing and/or in accordance with base building specifications and standards. Plastic tubing shall not be used in ceiling spaces. Hard wire all electrical control devices into the associated system magnetic starter. Provide power to control panel from the nearest normal power electrical distribution panel.

4.2 Thermostats/Temperature Sensors

- 4.2.1 Mounting height of adjustable thermostats and temperature sensors located in a barrier-free path of travel shall be 3'-11" (1200mm) from finished floor to top of thermostat. Adjustable thermostats and temperature sensors not located in a barrier-free path of travel (such as mechanical rooms, electrical rooms etc. as listed in the Ontario building code), non-adjustable thermostats and temperature sensors shall be mounted 5'-0" (1500mm) from finished floor. Coordinate final locations with architect/interior designer before roughing-in. Do not install in vicinity of electrical lighting dimmers or heat generating equipment such as photocopiers, computer terminals, printers, televisions, vending machines etc. Do not install hidden behind cabinets or furniture systems - refer to interior designer drawings for equipment and furniture locations.
- 4.2.2 Provide stand-off mounting and insulated sub-base for thermostats located on perimeter walls.
- 4.2.3 Clean and recalibrate all new thermostats upon completion of construction.

4.3 Training

- 4.3.1 Provide controls systems training for Owner when system has been completed and verified in accordance with specifications. Provide four (4) hours minimum for new HVAC control systems.

5. SEQUENCE OF OPERATION FOR HVAC CONTROLS

5.1 Temperature

- 5.1.1 Maintain base building standard temperature in all continuously occupied spaces.

6. REFRIGERATE PIPING

- 6.1 Install in accordance with CSA B52, EPS1/RA/1 and ASME B31.5.
- 6.2 New refrigerant tubing shall be type "ACR" seamless copper tubing with wrought copper fittings and silver brazed joints.
- 6.3 Tubing processed for refrigeration installations, deoxidized, dehydrated and sealed, complete with insulation.
- 6.4 Hard copper: to ASTM B280, type ACR B (nitrogenized).
- 6.5 Annealed copper: to ASTM B280, with minimum wall thickness as per CSA B52 and ASME B31.5.
- 6.6 Fittings to suit design pressure 2070 kPa and temperature 121°C (249.8°F).
- 6.7 With the exception of Mitsubishi A/C units, provide trap at base of risers greater than 1800 mm (6 foot) high and at each 6000 mm (20 foot) thereafter.
- 6.8 Select tubing, fittings, and components to suit system operating and test pressures,
- 6.9 Allow elbow fittings shall be long radius type.
- 6.10 New tubing shall be sized to provide manufacture's listed cooling capacities.
- 6.11 Provide permanent guards as required to protect tubing and fittings from damaged.
- 6.12 Slope horizontal runs sloped towards the compressor at a rate of 1/2" per foot (15mm per 300mm). Support lines at intervals of not more than 8'-0" (2400mm)

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with suitable anchors. Use rubber grommets between tubing and clamps to prevent line chafing.

- 6.13 Where vertical runs of more than 5'-0" (1500mm) occur in a suction line, it shall enter at the top of the next horizontal section. Arrange piping so refrigerant or oil cannot drain from suction line into coil.
- 6.14 Minimize tubing and elbows.
- 6.15 Use flexible metal hose where required to reduce tubing vibration.
- 6.16 Tubing to remote condensing units shall include shut off valves.
- 6.17 Ensure tubing is dehydrated, tested, adequately charged, and gas tight.
- 6.18 For air conditioning systems with over 5 tons of cooling, submit all required documents and fees to TSSA.

7. HVAC Ducts And Casings

7.1 Ductworks

- 7.1.1 Rectangular or square galvanized steel ductwork shall be prime lock forming quality to ASTM A525M Ductwork shall have G60 coating; ductwork to be painted shall have satin coated finish. Sheet metal gauges shall be in accordance with SMACNA "HVAC duct construction standards metal and flexible" suiting duct size and classification. All rectangular ductwork shall be sized (width x height) for up to a ratio of 3:1.
- 7.1.2 Round (spiral) galvanized steel ductwork shall be alpha industries limited "free-flow" or equivalent, prime lock forming quality to ASTM A525M, factory fabricated fittings with fully welded seams and joints. Ductwork shall have G60 coating; ductwork to be painted shall have satin coated finish. Sheet metal gauges shall be in accordance with SMACNA "HVAC duct construction standards metal and flexible" to suit the duct size and classification.
- 7.1.3 Unless stated otherwise, duct work shall be rigid galvanized steel. Use 45 degree conical transitions for branch connections.
- 7.1.4 Duct layout as shown on plans is to show the design intent. Design drawings should not be used to measure duct lengths or for fabrication. The design drawings are schematic in nature. Contractor shall coordinate duct route and all necessary fittings to accommodate site conditions and to meet the design intent.
- 7.1.5 Provide duct work and hangers in accordance with SMACNA standards.
- 7.1.6 Duct sizes shown on drawings indicate clear inside dimensions.

- 7.1.7 Equivalent duct sizes may be substituted in lieu of those shown, in order to avoid interference with structure and other services. Width and height shall not be larger than a 3:1 ratio. Obtain Consultant's review prior to fabrication of ductwork.
- 7.1.8 Install all ductwork and piping as high as possible, unless otherwise stated.
- 7.1.9 Spin-in duct fittings: SMC 24 gauge or Kerr-Hunt model no. So-2 complete with balancing damper of size equal to branch duct or diffuser neck diameter.
- 7.1.10 Seal all new low pressure ducts, less than 0.5 kPa (2 inches WC) and low pressure modifications to SMACNA seal class "C" using sealant and aluminum tape.
- 7.1.11 Provide flexible duct connections between inline fans or other equipment and ductwork.
- 7.1.12 Repair existing thermal insulation when connection to existing ductwork.
- 7.1.13 Provide rigid duct branches and hangers to all diffusers located in drywall ceilings.
- 7.1.14 For Bypass Boxes, provide a minimum four (4) duct diameter but not more than 48" (maximum) of straight rigid duct from supply mains to Bybox inlet.
- 7.1.15 Provide transfer air duct for all dimising walls and full height partition walls. No transfer air ducts to be included in multi-tenant corridors.
- 7.1.16 Transfer air openings in baffle and door undercuts shall be coordinated with general contractor.

7.2 Flexible Ducts

- 7.2.1 Aluminum flex duct shall be Commercial (Bare) True Flex - Model TF by Peppertree Air Solutions Inc. Flex duct shall be manufactured from a continuous strip of spirally wound 3003 corrugated aluminum, mechanically interlocked to produce an airtight and leak proof triple seam. ULC-S110 listed as Class 1 air duct connector, Flame Spread Rating of not over 25, Smoke Developed Rating of not over 50.
- 7.2.2 Install as one continuous piece. Maximum length not to exceed 8 feet. Remainder of duct branch shall be rigid duct. Flexible ducts shall be of diameter equal to diffuser neck size or as noted on drawings.

7.3 Stainless Steel Ductwork

- 7.3.1 300 Series stainless steel, type 304 or type 316 as specified in Part 3 of this Section, ASTM A167 and ASTM A480, with a #4 finish where bare (uncovered) and exposed in finished areas and a #2B finish elsewhere, with unless otherwise specified, metal gauges in accordance with ANSI/SMACNA HVAC Duct Construction Standards

Metal and Flexible to suit duct location and working pressure classification, and stainless steel support hardware to match duct material.

- 7.3.2 Provide stainless steel ductwork for all fresh air intakes and wherever else indicated on drawings. Slope ductwork at 2% minimum to drainage points.

7.4 Aluminum Ductwork

- 7.4.1 Shower exhaust ductwork from aluminium exhaust air grilles to energy recovery ventilator shall be type 3003-
- 7.4.2 H14 aluminum c/w watertight sealed joints in accordance with SMACNA standards. provide cadmium plated hangers, washers, and nuts throughout. Slope ductwork at 2% minimum towards aluminum grilles.
- 7.4.3 Alloy 3003 Temper H14 aluminum, ASTM B209, shop or factory fabricated, water-tight, with metal gauges and fabrication in accordance with ANSI/SMACNA HVAC Duct Construction Standards Metal and Flexible to suit the duct working pressure classification, and type 316 stainless steel support hardware.

8. AIR DUCT ACCESSORIES

8.1 Air Volume Balancing Dampers

- 8.1.1 Balancing dampers shall be manually operated opposed blade or splitter type. Splitter dampers shall be completed with control rode, pivot bracket, and ball joint fitting with locking set screw.
- 8.1.2 Splitter dampers shall be installed on all branch duct connections (or take-offs) from ducts.
- 8.1.3 Opposed blade dampers shall be used for all diffuser/grille balancing dampers (where indicated).

8.2 Duct Elbows And Turning Vanes

- 8.2.1 Provide elbows with radius equal to width of duct (minimum)
- 8.2.2 For low pressure systems: elbow radius of not less than duct width. Barber-Coleman "Airturms", Hart & Cooley "Ducturms", or Ductmate turning vanes shall be provided in elbows of lesser radius in all ductwork.

8.3 Flexible Connectors

- 8.3.1 Flexible connectors to be fire resistant neoprene coated glass fabric. Provide flexible connections at all ducted HVAC units, fans and where indicated.

9. AIR OUTLETS AND INLETS

9.1 Diffusers, Registers, And Grilles

- 9.1.1 Refer to equipment list for details regarding diffuser and grilles.

10. HVAC AIR CLEANING DEVICES

10.1 Filters

- 10.1.1 Provide filters to suit equipment, or as directed by equipment manufacturer.
- 10.1.2 Replace air filters for all Heat Pumps after work has been completed.
- 10.1.3 Provide temporary MERV 8 filters for return air inlets during construction. Replace weekly and remove when construction has been completed.

11. COMMON WORK RESULTS FOR INTEGRATED AUTOMATION

11.1 Submittals

- 11.1.1 Submit control working drawings and wire diagrams with written description of sequences of operation.

11.2 Control Wiring

- 11.2.1 Provide all required control wiring for a complete installation. All control wiring shall be in conduit as per base building standards.
- 11.2.2 250 volt rated, minimum #18 AWG stranded multiconductor cable, FT6/CMP rated.
- 11.2.3 Provide all control wiring in conduit regardless of voltage in accordance with Division 26.
- 11.2.4 Control wiring shall be installed neatly tight to the underside of structure.
- 11.2.5 All control wiring shall be plenum-rated.

12. INTEGRATED AUTOMATION NETWORK EQUIPMENT

12.1 Monitoring Points

- 12.1.1 BAS shall have as minimum the I/O point types available as described on drawings. Provide all the points required to deliver compliant controls system
- 12.1.2 If manufacturer standard controllers do not include specified type and quantities of I/O's, provide additional I/O's to meet specifications quantity and types.

END OF SECTION

1. PROCUREMENT AND CONTRACTING REQUIREMENTS

1.1 Available Information

- 1.1.1 Existing condition information
 - 1.1.1.1 Obtain a copy of the Owners design criteria and construction manual. Review and comply with all requirements of the manual.
 - 1.1.1.2 Mechanical drawings are to be considered diagrammatical. Visit the site to review the existing site conditions prior to submitting bid and include all costs associated with installation of mechanical and electrical services. Include in Bid for all offsets, transition pieces, fittings, etc. as required for a complete installation. Examine routing in which mechanical services are proposed to be located.
 - 1.1.1.3 Locations of existing and new services are approximate. Location of new services and equipment may be relocated to suit site conditions at no additional cost to the contract. Before installing equipment, ensure that all access requirements have been provided. Refer to drawings for access requirements. Ensure that electrical services do not obstruct access requirements for existing and new mechanical equipment - coordinate with electrical contractor.

1.2 General Conditions

- 1.2.1 Intent
 - 1.2.1.1 Include all material, labour, equipment, and plant construction as necessary to make a complete installation as shown and specified.
 - 1.2.1.2 It shall be the Contractor's responsibility to ensure that the systems specified are complete and operative.
 - 1.2.1.3 Comply with the General contractor's construction schedule.
 - 1.2.1.4 Maintain base building standards and equipment compatibility.
 - 1.2.1.5 Comply with all codes and standards and with authority having jurisdiction.
- 1.2.2 Drawings and specifications
 - 1.2.2.1 Drawings are to be read in conjunction with specifications.
 - 1.2.2.2 Should any discrepancy appear between the drawings and specifications which leaves the Contractor in doubt as to the true intent and meaning, a ruling is to be obtained from the Consultant in writing before submitting Tender. If this is

not done, the maximum, the most expensive alternate or option, will be provided in Base Tender Bid.

- 1.2.2.3 The drawings provide design intent, and are not to be used to quantify material. Contractor is to coordinate installation of work to meet the design intent.

1.3 Supplementary Conditions

1.3.1 General

- 1.3.1.1 Refer to Architectural/Interior Designer drawings for exact location of dimensioned equipment and devices.
- 1.3.1.2 Refer to Architectural/Interior Designer drawings for additional notes which complement these drawings and specifications.

1.3.2 Health and safety requirements

- 1.3.2.1 Be responsible for the safety of workers and the equipment on the project in accordance with all applicable safety legislation passed by federal, provincial, and local authorities governing construction safety. The more stringent regulations shall prevail.

2. GENERAL REQUIREMENTS

2.1 Project Management And Coordination

2.1.1 Project coordination

- 2.1.1.1 Cooperate and coordinate with Project Manager and all other trades on the site so that all equipment can be satisfactorily installed, and so that no delay is caused to any other trades.
- 2.1.1.2 Prior to fabrication and installation of equipment, ensure that such Items can be installed as indicated without interference with the structure, or the work of other trades. If any materials are fabricated or installed prior to the investigation and reaching of a solution to the possible interference problems, necessary changes shall be made at the Contractor's expense.
- 2.1.1.3 Provide code or manufacturer required clearances for servicing, disassembly, and removal of equipment and components.

2.1.2 Facility services coordination

- 2.1.2.1 Maintain all operational building services; shutdown of services shall only take place as authorized by base building and request to be in writing. Provide minimum 72 hours' notice or as indicated in Owner Construction Criteria manual.

- 2.1.2.2 Co-ordinate with Property Management for scheduling of all work required to be done after office hours and weekends, i.e. x-rays, scanning, drilling through slab, power shutdowns, interfacing to life safety systems, etc. All costs involved, including work to be done by the Property Management's approved fire alarm and life safety systems contractor, etc., shall be at Contractor's expense.
- 2.1.2.3 All work in occupied space and ceiling spaces below shall be done after regular business hours and coordinated and scheduled with Project Manager. Work to be completed at Contractors expense.
- 2.1.2.4 Review all removed equipment not being reused (Diffusers, Heat Pumps, Fans etc.) with the Owner. Dispose of equipment as requested by the Owner.

2.2 Submittal Procedures

2.2.1 General

- 2.2.1.1 Before delivery to site of any item of equipment, submit shop drawings complete with all data, prechecked by the Contractor and stamped accordingly, for review by the Consultant. Indicate project name on each brochure or sheet, make reference to the number and title of the appropriate specification section, and provide adequate space to accommodate the Consultant's review stamp(s).
- 2.2.1.2 Submit shop drawings to the Consultant in electronic (PDF) format, as coordinated after award of contract. Where submittals are derived from digital originals, to ensure maximum quality and legibility, do not print and rescan documents; submittals made as such will be immediately rejected.
- 2.2.1.3 Submit shop drawings with one week after award of contract.
- 2.2.1.4 Submit Material Safety Data Sheet (MSDS) for all applicable products.
- 2.2.1.5 Products certified by a recognized testing agency accredited by the Standards Council of Canada, and bear a certification mark from that agency, for example the CSA certification mark, cUL listing, or ULC listing. Where certified or listed material and equipment is not available, obtain special approval from Authority Having Jurisdiction before delivery to project site, and submit the approval to the Consultant.
- 2.2.1.6 Equipment specified on drawings and in specifications are to be considered the minimum standard of acceptance.

- 2.2.1.7 All materials to meet flame spread rating requirements of all Authorities Having Jurisdiction.
- 2.2.1.8 The following is to be read in conjunction with consultant's shop drawing review stamp for submitted shop drawings or product data sheets: "This review by the mechanical consultant is for the sole purpose of determining conformance with the general design concept. This review does not mean that consultant approves detail design indicated in the reviewed shop drawings, the responsibility for which remains with the contractor. Consultant's review does not relieve contractor of responsibility for errors or omissions in shop drawings or of the contractor's responsibility for meeting requirements of contract documents. Confirm dimensions and weights for coordination of work of sub-trades."
- 2.2.1.9 Equipment shall meet the energy requirements of ASHRAE 90.1.
- 2.2.2 Substitution of specified equipment
 - 2.2.2.1 "Approved equal" shall be defined as an alternate approved by the Consultant.
 - 2.2.2.2 Equivalent equipment may be provided, but must be equal to or better than the base specified product. Obtain consultant's approval prior submitting equivalent equipment shop drawing.
- 2.2.3 Product storage and handling requirements
 - 2.2.3.1 Store all equipment and materials in dry and heated locations.

2.3 Quality Requirements

- 2.3.1 Permits and fees
 - 2.3.1.1 Obtain and pay for all Permits and fees required for the execution and inspection of the Work and pay all charges incidental to such Permits. Submit to the Authority Having Jurisdiction the necessary number of drawings and specifications for examination and approval prior to commencement of work.
 - 2.3.1.2 Arrange and pay for any special inspection of equipment specified if and when required.
- 2.3.2 Codes and Standards
 - 2.3.2.1 2.3.2.1 Comply with current regulations of all applicable provincial and municipal codes and regulations, including, but not limited to, the Ontario Building Code, and the requirements of any Authorities Having Jurisdiction (AHJ).

- 2.3.2.2 2.3.2.2 Comply with other standards as related to each trade.
 - 2.3.3 References
 - 2.3.3.1 Health Canada / Workplace Hazardous Materials Information System (WHMIS), Material Safety Data Sheet (MSDS).
 - 2.3.3.2 Ontario Building Code.
 - 2.3.4 Quality assurance
 - 2.3.4.1 Qualifications: Work to be carried out by qualified, licensed tradespersons or apprentices in accordance with Authorities Having Jurisdiction.
 - 2.3.4.2 Only first class workmanship will be accepted, not only in regards to durability, efficiency and safety, but also in regards to neatness of detail. Present a neat and clean appearance on completion. Any unsatisfactory workmanship will be replaced at no extra cost.
 - 2.3.4.3 Conform to the best practices applicable to the type of work. Install equipment and systems in accordance with manufacturers' recommendations, and consistent with the general requirements of the specification.
 - 2.3.5 Field quality control
 - 2.3.5.1 Provide instruments, meters, equipment and personnel required to conduct tests during and at conclusion of project.
 - 2.3.5.2 Manufacturer's Field Services.
 - 2.3.5.2.1 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting, and cleaning of product and submit Manufacturer's Field Reports.
 - 2.3.6 Inspections
 - 2.3.6.1 Furnish a Certificate of Acceptance from Inspection Department on completion of work.
 - 2.3.6.2 The Consultant will carry out inspections and prepare deficiency lists for actions by the Contractor, during, and on completion of the Project.
- 2.4 Temporary Facilities And Control**
 - 2.4.1 Contractor shall assume responsibility for any disruption caused by his forces to operational building services. Should temporary connections be required to maintain services during the work, supply

and install all necessary equipment. Repair any system damaged during the execution of the work.

2.5 Temporary Dust Control

2.5.1 General

- 2.5.1.1 Refer to Owner construction criteria manual for dust control procedures.
- 2.5.1.2 The containment and clean-up of dust and debris shall be completed by competent persons trained and knowledgeable.
- 2.5.1.3 Any scaffolds and/or platforms used to access and/or support workers and to completely contain and clean-up dust and debris materials will be constructed or used in accordance with Occupational Health & Safety regulations.
- 2.5.1.4 Provide all necessary labour to secure the required utilities for the control of dust and debris during the work.

2.5.2 Conditions of work

- 2.5.2.1 The fire protection system shall remain active and be protected and maintained during the work.

2.5.3 General containment and clean up procedures

- 2.5.3.1 Construct air tight dust containment barriers and isolate the work areas of the building during dust producing activities.
- 2.5.3.2 Concrete debris shall be wetted to suppress dust, and effectively contained prior to removal from containment area.
- 2.5.3.3 Containers shall be covered for transport when full. Remove waste containers on a regular basis. In the case of two shifts, the last hour of the second shift will be used for waste removal.
- 2.5.3.4 Return air openings shall be provided with 1" thick (MERV 8) filters and replaced weekly during the construction period. Remove when construction has been completed.
- 2.5.3.5 After completion of all demolition work, surfaces shall be wet brushed and sponged or cleaned by some equivalent method to remove all visible residues.
- 2.5.3.6 Work area to be clean of visual dust and debris.
- 2.5.3.7 Provide all exit doors from construction area with dust retaining mats.

2.6 Execution Requirements

2.6.1 Examination and preparation

- 2.6.1.1 Prior to submitting Tender, the Contractor shall carefully examine the Site and ascertain all conditions which affect the Work.
 - 2.6.1.2 No extras will be allowed for work resulting from conditions that would have been evident upon a thorough examination.
 - 2.6.1.3 Verify location and sizes of existing services prior to making new connections to ensure that the existing systems have adequate capacities to accommodate new loads.
- 2.6.2 Cutting and patching
 - 2.6.2.1 The Contractor will be responsible for all cutting and patching required for the installation.
 - 2.6.2.2 Structural members are not to be cut without consent of the Owner and structural engineer.
 - 2.6.2.3 Restore finishes to match existing surroundings.
- 2.6.3 Cleaning and waste management
 - 2.6.3.1 The Contractor and associated sub trades, at all times during construction, is to keep the site free of all debris, boxes, packing, etc., resulting from performance of the Work.
 - 2.6.3.2 At the completion of this Work, the installation is to be left in a clean and finished condition.
 - 2.6.3.3 Clean and touch up surfaces of shop-painted equipment scratched or marred during shipment or installation, to match original paint.
 - 2.6.3.4 Remove and dispose off-site, all materials removed, abandoned, and not to remain, designated for salvage, or be re-used in an appropriate manner acceptable to local authorities having jurisdiction, specifically equipment and materials considered hazardous to the environment, unless otherwise noted to be turned over to the Owner.
- 2.6.4 Starting and adjusting
 - 2.6.4.1 Before commencement of work, mechanical contractor to test all existing heat pumps and associated controls and control valves to ensure proper operation - submit report to Engineer and Owner.
 - 2.6.4.2 Demonstrate that the equipment and systems meet the specified requirements. Tests may be conducted as soon as conditions permit, and consequently the Contractor is to make all changes, adjustments, or replacements required as the preliminary tests may indicate prior to the final tests.

Tests are as specified in various sections of the specifications.

- 2.6.4.3 Provide instruments, meters, equipment and personnel required to conduct tests during and at conclusion of Project. The Contractor shall be in charge of the plant during tests. The Contractor shall assume responsibility for damages in the event of injury to the personnel, building, equipment, and shall bear all costs for liability, repairs, and restoration in this connection. Submit test results.
- 2.6.4.4 Test new and interfaced systems for proper operation to ensure that the quality and reliability of the base building system is not altered or reduced.

2.7 Closeout Procedures

2.7.1 Building permit compliance

- 2.7.1.1 Prior to requesting the Consultant's letter "Review of General Conformance" for submission to the municipal building department to allow occupancy, the following items must be complete and submitted to the Mechanical Consultant as applicable:

- 2.7.1.1.1 Contractor must confirm that all fire extinguishers have been installed.
- 2.7.1.1.2 Provide NFPA 13 certificate for sprinkler head system.
- 2.7.1.1.3 Confirmation that municipal plumbing inspector has reviewed the work and notes no deficiencies.
- 2.7.1.1.4 Final Air and Water Balancing report (with deficiencies reviewed and balancing completed).
- 2.7.1.1.5 Contractor must certify that HVAC control interlocks with safety systems (e.g. fire alarm) are operational.

- 2.7.1.2 If any of the above items have not been completed at the time of Consultant's Inspection, and the letter of "assurance of professional field review and compliance" cannot be issued, any costs for subsequent Inspections will be charged to the Contractor.

2.7.2 Substantial performance

- 2.7.2.1 Prior to requesting Substantial Performance Inspection, the following items must be completed and submitted to the Consultant, as applicable:

- 2.7.2.1.1 Project record drawings must be submitted to Consultant for review.
 - 2.7.2.1.2 Maintenance manuals must be submitted to Consultant for review.
 - 2.7.2.1.3 Air Balancing report.
 - 2.7.2.1.4 Hydronic Balancing report.
 - 2.7.2.1.5 NFPA 13 & 14 Compliance Letters.
 - 2.7.2.1.6 Backflow Preventer test report
 - 2.7.2.2 If any of the above items have not been completed at the time of the Substantial Performance Inspection, and the Substantial Performance certificate cannot be issued, any costs for subsequent Inspections will be charged to the Contractor.
- 2.7.3 Operation and maintenance (O&M) manuals
 - 2.7.3.1 Submit three hard copies in 3-ring binder, and one soft in searchable PDF format of O&M Manual to the Consultant for review.
 - 2.7.3.2 A copy of the O&M Manual shall be provided to the Owner at the end of the project. O&M Manual shall include air balance report, sprinkler NFPA conformance letter, equipment shop drawings, as-built drawings, and engineer's completion letter.
 - 2.7.3.3 O&M Manuals to include:
 - 2.7.3.3.1 As-Built Drawings (AutoCAD and PDF format).
 - 2.7.3.3.2 Testing and Commissioning Reports.
 - 2.7.3.3.3 Inspection Certificates.
 - 2.7.3.3.4 HVAC balancing reports.
 - 2.7.3.3.5 Warranties.
 - 2.7.3.3.6 Training records.
 - 2.7.3.3.7 Operation and Maintenance procedures.
 - 2.7.3.3.8 Reviewed shop drawings of all new equipment.
- 2.7.4 Project record documents
 - 2.7.4.1 Record Drawings
 - 2.7.4.1.1 Maintain a drawing on Site, complete with red-line record of all revisions. Provide exact dimensions and routing of below-grade or below-slab services. Indicate the following:
 - (1) HVAC and Plumbing

- (2) All revised routing
 - (3) Coordinate access to Consultant's AutoCAD files for purposes of contractor's as-built drawings.
 - (4) Complete record drawings accurately marked up in red ink must be submitted for review. Once reviewed, prepare as-built drawings in a neat manner, showing all deviations in work as per site red-line drawing.
 - 2.7.4.2 AutoCAD as-built drawings
 - 2.7.4.2.1 On completion of Work, submit to the Consultant electronic drawings in AutoCAD and PDF format.
 - 2.7.4.2.2 Submit copies of 'As-Built' record drawings (in AutoCAD format) to Owner.
- 2.7.5 Warranties
 - 2.7.5.1 Submit a written guarantee to the Owner for two years from the date of acceptance. This guarantee shall bind the Contractor to correct, replace or repair promptly any defective equipment workmanship without cost to the Owner.
 - 2.7.5.2 Provide extended warranties as specified.

3. COMMON WORK RESULTS FOR CONCRETE

3.1 Concrete Work

- 3.1.1 Provide all concrete work required. Reinstall surfacing as per architectural requirements and make good.
- 3.1.2 Provide all x-rays/scanning for cutting and coring of existing concrete floors. Submit proposed locations to Base Building Structural Engineer for review. Obtain Structural Engineer's approval before proceeding with coring and cutting.
- 3.1.3 For structural concrete floors on grade, provide all x-rays/scanning for cutting and coring of existing concrete floors to facilitate the installation of buried sanitary drain piping. Confirm location of existing buried sanitary drain on site and determine routing of new buried sanitary drain piping for connection to existing buried sanitary drain. Submit proposed locations of cutting and to Base Building Structural Engineer's for review. Obtain Structural Engineer's approval before proceeding with coring and cutting. Make arrangements with

Plumbing inspector to review buried sanitary work before proceeding with back-fill, concrete, screed work. Make floor good.

4. FIRE AND SMOKE PROTECTION

4.1 Firestopping

- 4.1.1 Submit shop drawings of each type of firestop and smoke seal system including product data sheet and a WHIMIS sheets for review. Identify each system with manufacturer's name and type, ULC designation, experience of proposed fire-stopping and smoke seal system applicator, and proposed use. After shop drawings have been reviewed, all fire-stopping work is to conform to reviewed shop drawings.
- 4.1.2 Before starting any work on site, submit detailed shop drawings to the Mechanical Consultant for review and comments. Include the following information:
 - 4.1.2.1 Manufacturer's technical product data and installation instructions for each specific type and location of penetration.
 - 4.1.2.2 For each specific type and location of penetration, provide installation instructions from a recognized independent testing agency.
 - 4.1.2.3 Mark penetration types and locations on set of white prints. At completion of project, transfer this information to "as-built" drawings.
- 4.1.3 Provide approved fire-stopping material to maintain integrity of fire separations.
- 4.1.4 Manufacturers: 3M, AD Fire Protection Hilti, or approved equal.
- 4.1.5 Fire stopping and smoke seal system materials shall be asbestos free elastomeric materials tested, listed, and labelled by ULC in accordance with ULC S115 and ULC S101 for installation in ULC designated firestopping and smoke seal systems to provide a positive fire, water and smoke seal, and a fire-resistance rating (flame, hose stream and temperature) not less than fire resistance rating of surrounding fire rated construction.
- 4.1.6 Materials are to be compatible with abutting dissimilar materials and finishes and complete with primers, damming and back-up materials, supports, and anchoring devices in accordance with firestopping manufacturer's recommendations and ULC tested assembly.
- 4.1.7 Ensure suitable environmental conditions for proper installation of fire stopping. Refer to manufacturer's recommendations and requirements.
- 4.1.8 Only qualified workers (min 3 years) shall perform fire-stopping work.

- 4.1.9 Submit certification indicating a letter of proper firestopping and smoke seal installation, ensuring installation complies with CAN4-115-M85 and include in close-out manual.

5. ACCESS DOORS AND PANELS

5.1 Access Doors

- 5.1.1 Provide access doors for new and existing concealed valves, dampers, junction boxes, equipment, etc.
- 5.1.2 Access doors to match wall and ceiling finishes
- 5.1.3 Use recessed type access doors in gypsum ceilings.
- 5.1.4 Provide access doors wherever equipment, valves, dampers, control devices. Etc., are concealed behind walls or inaccessible ceilings.
- 5.1.5 Access doors flush to edge of frame, concealed continuous hinge with screwdriver operated cam latch. Door construction to be minimum 14 gauge with 16 gauge frame. Fire-rated door construction to be a minimum 20 gauge insulated door with 16 gauge frame. Insulation thickness to provide required rating.
- 5.1.6 Size doors to allow adequate operating/maintenance clearance for devices. Body entry: 600 mm x 600 mm (24 inch x 24 inch). Hand entry: 300 mm x 300 mm (12 inch x 12 inch), unless noted otherwise.
- 5.1.7 Acceptable manufacturers: Acudor model as per assembly, or equal by LeHage:
- 5.1.7.1 Concealed plaster: PS-5010
- 5.1.7.2 Concealed drywall: DW-5015
- 5.1.7.3 Existing drywall: DW-5040
- 5.1.7.4 Fire-rated: FW-5050/FB-5060 to match assembly
- 5.1.8 Coordinate locations and sizes of access doors/panels with base building operator, interior designer, and project manager.
- 5.1.9 Minimize quantity of access panels/doors by grouping together valves, backflow preventors and all tubing joints.
- 5.1.10 Provide Fire rated doors where required. Refer to interior designer drawings for fire rating.

END OF SECTION

1. OPERATION AND MAINTENANCE OF ELECTRICAL SYSTEMS

1.1 Tracing Existing Electrical Circuits

- 1.1.1 Trace all circuits in the area of work listed as existing, and verify existing conditions prior to any modifications as indicated.
- 1.1.2 Where drawings indicate "connect to existing circuit", use a spare breaker, where available. Otherwise, verify existing load with a meter and advise the Consultant if the additional load will cause a circuit to trip.
- 1.1.3 Where provided panelboard schedules indicate "Existing Circuit" or similar, provide the correct description for the circuit. Existing Circuit will not be acceptable in the final panelboard schedules submitted as part of closeout submittals.

1.2 Existing Cabling In Return Air Plenums

- 1.2.1 In ceilings being used as a return air-plenum, Contractor to review existing low-voltage cabling uncovered as part of the work.
- 1.2.2 Immediately notify the Consultant of any cables identified are not plenum rated (i.e. CMP, or FT-6 rated).

1.3 Thermographic Investigation

- 1.3.1 Check and inspect existing distribution equipment to be re-used (i.e., panels, panel breakers, disconnect switches, etc.) for any evidence of abnormal overheating conditions. Report to Consultant and rectify any issues encountered. Perform thermographic scan under actual tenant load in operations and submit scan results indicating problems have been corrected to Property Management for review and include same in Maintenance Manuals.

1.4 Luminaire Cleaning

- 1.4.1 Clean existing luminaires to be re-used and existing luminaires to remain.

1.5 Luminaire Relamping

- 1.5.1 Provide new lamps for existing luminaires. Dispose of existing lamps in accordance with Recycle Council of Ontario's "Take Back The Light" program.

1.6 Luminaire Replacement

- 1.6.1 Provide new fixture chain hangers to independently support new luminaires from the building structure, supported at opposite ends.

2. COMMON WORK RESULTS FOR ELECTRICAL

2.1 Reference

- 2.1.1 Canadian Standards Association (CSA)
 - 2.1.1.1 CSA C22.1-18, Canadian Electrical Code, Part 1 (24th Edition), Safety Standard for Electrical Installations.
 - 2.1.1.2 Ontario Electrical Safety Code (OESC) 27th Edition, 2018.
 - 2.1.1.3 CSA C235:19, Preferred voltage levels for AC Systems up to 50 000 V.
 - 2.1.1.4 CSA C22.3 No. 1-15, Overhead Systems. Do underground systems in accordance with CSA C22.3 No. 7-15, Underground systems, except where specified otherwise.

2.2 Selective Demolition For Electrical

- 2.2.1 Remove all electrical equipment and devices on redundant structures. Make safe all circuits.
- 2.2.2 Maintain continuity of remaining devices and circuits.
- 2.2.3 To make safe: withdraw redundant wiring and remove unwanted conduit/wiring and accessories. Position breakers to off position and update panel schedules.
- 2.2.4 Make safe any redundant devices as shown on other drawings.
- 2.2.5 When relocating or removing equipment, should any circuits be abandoned, the conductors to these circuits must be removed or properly terminated as detailed in OESC Rule 2-130, Rule 12-114, Rule 12-3000, and OESC Bulletin 12-25-(latest version).

2.3 Low-Voltage Electrical Power Conductors And Cables

- 2.3.1 Conductors: minimum #12 AWG solid, and stranded for #8 AWG and larger. Copper conductors sized as indicated with RW90, 600 V insulation of chemically cross-linked thermosetting CSA C22.2 No. 38-14.
- 2.3.2 AC90 (commonly referred to as BX) cable maximum wire size to be #12 AWG unless otherwise noted. AC90 to be used only as drop to lighting fixtures and as drop to wiring devices in partitions from ceiling junctionbox/conduit combination. Maximum run of AC90 to be 3 m (10 ft) where exposed in lay-in suspended ceiling space only. Do not install exposed AC90. Do not daisy chain (leap frog) AC90 between luminaires.
- 2.3.3 All conductors used outdoor or in wet locations: RWU90 copper.
- 2.3.4 Wire and Box Connectors:
 - 2.3.4.1 Wire connectors: PVC insulation, steel shall be spring pressure type, current carrying parts copper or copper

alloy sized to suit copper conductors as indicated to CSA C22.2 No. 65-13.

2.3.4.2 Splicing connectors: fixture type current carrying parts copper or copper alloy sized to fit copper conductors #12 AWG with insulating materials of thermoplastic material to CSA C22.2 No.75-17.

2.3.4.3 Clamps to connectors for flexible circuits to CSA C22.2 No.18.3-12 (R2017).

2.3.4.4 Lugs, terminals, or screws used for termination of wiring to be suitable for copper conductors.

2.3.5 Voltage Drop:

2.3.5.1 Feeder conductors:maximum voltage drop 2%.

2.3.5.2 Branch circuit conductors:maximum voltage drop of 3%.

2.4 Conduit For Electrical Systems

2.4.1 Rigid metal conduit: to CSA C22.2 No. 45.1-07 (R20177).

2.4.2 Electrical Metallic Tubing (EMT): with couplings to CSA C22.2 No. 83-M1985 (R2017).

2.4.3 Rigid PVC conduit: to CSA C22.2 No. 211.2-06 (R2011).

2.4.4 Flexible metal conduit and liquid-tight flexible metal conduit: to CSA C22.2 No. 56-17.

2.4.5 Conduit Fastening:

2.4.5.1 One hole steel strap to secure surface conduits 50 mm (2 in) and smaller. Use two hole straps for conduits larger than 50 mm (2 in).

2.4.5.2 Beam clamps to secure conduits to exposed steel work.

2.4.5.3 Channel type supports for two or more conduits at 1.5 m (5 feet) on centre.

2.4.6 Conduit Fittings

2.4.6.1 Fittings for raceways to CSA C22.2 No. 18.3-12 (R2017). Fittings manufactured for use with conduit specified. Factory elbows where 90% bends are required for 50 mm (2 in) and larger conduits.

2.4.6.2 Cast fittings are not permitted to be used.

2.4.7 Branch circuits, control wiring, etc.

2.4.7.1 Conceal conduit work in finished areas unless otherwise noted.

2.4.7.2 Run conduit exposed in unfinished areas such as service rooms, rooms with no suspended ceilings, service tunnels, and penthouses. Install parallel to building lines.

- 2.4.7.3 Use electrical metallic tubing (EMT) for branch circuits unless noted otherwise.
- 2.4.7.4 Use liquid tight flexible conduit for connection to motors.
- 2.4.7.5 Use flexible metal conduit for connection to recessed incandescent fixtures without a pre-wired outlet box, connection to surface fixtures, work in movable metal partitions, or transformers.
- 2.4.7.6 Flexible metal conduit for fixtures in finished areas only where chain hanging is specified. Tie wrap the flexible conduit to the chain.
- 2.4.7.7 If plastic sleeves are used in fire rated walls or floors, remove before conduit installation.
- 2.4.7.8 Install cables, conduits and fittings to be embedded or plastered over, neatly and close to building structure so furring can be kept to minimum.

2.5 Boxes For Electrical Systems

- 2.5.1 Junction and Pull Boxes:
 - 2.5.1.1 Junction and pull boxes: to CSA C22.2 No. 40-17 welded steel construction, with screw-on flat covers for surface mounting.
 - 2.5.1.2 Covers with 25.4 mm (1 in) minimum extension all around, for flush mounted pull and junction boxes. Only main junction and pull boxes are indicated. Provide all boxes so as not to exceed 30 m (100 ft) of conduit run between pull boxes.
- 2.5.2 Outlet boxes, conduit boxes to CSA C22.2 No. 18.1 1-13 (R2018).
- 2.5.3 Sheet Steel Outlet Boxes:
 - 2.5.3.1 Hot Dipped Galvanized steel single and multi-gang flush device boxes for flush installation, minimum size 75 mm x 50 mm x 32 mm (3 in x 2 in x 1-1/4 in). 100 mm (4 in) square outlet boxes when more than one conduit enters one side with extension.
 - 2.5.3.2 Hot Dipped Galvanized steel utility boxes for outlets connected to surface-mounted EMT conduit, minimum size 100 mm x 50 mm x 50 mm (4 in x 2 in x 2 in).
 - 2.5.3.3 Cast boxes for surface work in finished areas.
- 2.5.4 Size boxes in accordance with CSA C22.1, rule 12-3036. Provide 100 mm (4 in) square or larger outlet boxes as required for special devices.
- 2.5.5 Gang boxes where wiring devices are grouped.
- 2.5.6 Blank cover plates for boxes without wiring devices.

2.5.7 Combination boxes with barriers where outlets for more than one system are grouped.

2.5.8 Location of Outlets

2.5.8.1 Do not install outlets back-to-back in wall; allow minimum 150 mm (6 in) horizontal clearance between boxes.

2.5.8.2 Change location of outlets at no extra cost or credit, providing distance does not exceed 3 m (10 ft), and information is given before installation.

2.6 Grounding And Bonding For Electrical Systems

2.6.1 Provide all equipment grounding as required, regardless of whether it has been shown on drawings or called for in this specification.

2.6.2 Arrange grounds so that under normal operating conditions, no injurious amount of current will flow in any grounding conductor.

2.6.3 Provide a ground wire in every conduit.

2.7 Hangers And Supports For Electrical Systems

2.7.1 Support Channels:

2.7.1.1 Support channels: length as indicated, u-shape, size 44 mm x 44 mm x 3 mm (1-3/4 in x 1-1/3 in x 1/8 in) thick, surface mounted or suspended as required.

2.7.2 All supporting devices, strut channel, threaded rod, anchors, etc. of the hot dipped" galvanized type. Electrogalvanized components will not be accepted.

2.7.3 Supports

2.7.3.1 All conduits, panels, etc. to be securely and adequately supported.

2.7.3.2 Where more than three conduits run together, conduit racks to be used.

2.7.3.3 Single runs of conduit to be supported by galvanized conduit straps or ring bolt type hangers.

2.7.3.4 Tie wire or perforated metal strap hangers will not be accepted.

2.7.3.5 Support all luminaires independently of the ceiling structure.

2.7.4 Floor supports:

2.7.4.1 Provide a 100 mm (4 in) high concrete housekeeping pad for floor mounted electrical distribution equipment, such as transformers, switchboards, distribution panelboards, engine generators, uninterruptible power supplies and batteries, and transfer switches.

- 2.7.4.2 Extend pad a minimum of 100 mm (4 in) beyond footprint of equipment, unless noted otherwise.

2.8 Vibration Controls For Electrical Systems

- 2.8.1 Ensure that all electrical equipment operates without objectionable noise or vibration. Provide isolation devices to prevent noise and vibration transmission (i.e., spring type and pad type isolators and loop flexible conduits).
- 2.8.2 Provide flexible conduits for final connections of conduits to any vibrating equipment.

2.9 Identification For Electrical Systems

- 2.9.1 In each junction and outlet box, properly identify the branch wiring with circuit tags.
- 2.9.2 Revise existing directory of panelboards to the consultant's satisfaction, clearly indicating all branch loads added or revised. All panel directories (revised or new) shall be typed written.
- 2.9.3 Wiring Identification
 - 2.9.3.1 Identify wiring with permanent indelible identifying markings, either numbered or coloured plastic tapes, on both ends of phase conductors of feeders and branch circuit wiring.
 - 2.9.3.2 Maintain phase sequence and colour coding throughout.
 - 2.9.3.3 Colour coding: to CSA-C22.1.
- 2.9.4 Provide identification lamaroid nameplates which are glue attached for the new equipment. Identification to include name of the equipment / name of the supply source; rated load amp (a) or horsepower (hp) – voltage (v) - number of phase (ø) - number of wire (w)
 - 2.9.4.1 E.G. panel c (1/2")
 - 2.9.4.2 Fed from panel 5ep (3/8")
 - 2.9.4.3 100A - 120/208V - 3ø – 4W (3/8")
- 2.9.5 Nameplates to be a black background with white engraved letters for building power and red background with white engraved letters for generator or ups power. Minimum size letters 3/8". submit wordings of nameplates for approval prior to manufacture.
- 2.9.6 Nameplates to be provided for switchboards, distribution panels, branch panelboards, disconnects, transformers, starters, wireways, power supplies and other major systems components.
- 2.9.7 For each newly installed and existing receptacle and system furniture connections in the renovated space, provide circuit identification on

their faceplates with 'dymo-tape' or approved equivalent indicating panel designation and circuit number.

2.10 Overcurrent Protective Device Coordination

- 2.10.1 Ensure circuit protective devices such as overcurrent trips, relays and fuses are installed to required values and settings.

2.11 Equipment Wiring

- 2.11.1 Provide the following services for equipment supplied by others trades:
- 2.11.1.1 The trade supplying the equipment will be responsible for supply of motors, starters, variable frequency drives, and Motor Control Centres.
 - 2.11.1.2 In every instance, install starter, motor control centre, variable frequency drive (VFD), etc. and wire to line side of the starter, the Motor Control Centre, or VFD. Extend wiring from starter, motor control centre or VFD to motor.
 - 2.11.1.3 Provide 600 mm (24 in) of flexible waterproof conduit for final connection to motors.
 - 2.11.1.4 Provide disconnect switches where required by code and as indicated on the drawings.
 - 2.11.1.5 Where individual starters and controls are grouped together provide a panel for mounting this equipment. Provide a feeder, main fused disconnect and a splitter of adequate size and capacity and wire to line side of the starters on this panel and from starters to motors.
 - 2.11.1.6 Ascertain exact locations of starters, motor control centres, motors, motorized dampers, VAV boxes, infra-red plumbing fixture controls and heating control valves from other drawings and coordinate exact locations with appropriate trade.
- 2.11.2 Plumbing equipment wiring
- 2.11.2.1 Provide branch circuit wiring and an outlet for each infra-red plumbing fixture control. Control wiring performed by plumbing trade.
- 2.11.3 HVAC equipment wiring
- 2.11.3.1 In the case of unit heaters, reheat coils and cabinet unit heaters, terminate wiring on terminals provided. Control wiring, thermostat integration, and controls are to be performed by the supplying trade.
 - 2.11.3.2 Provide branch circuit wiring and an outlet for each motorized damper, variable air volume box (VAV Box), or heating control valve. Control wiring performed by HVAC trade.

- 2.11.4 Motor Sizing
 - 2.11.4.1 Motors up to and including 1/3 HP, shall be 1 phase, 60 Hz, 120 volts.
 - 2.11.4.2 Motors above 1/3 HP as indicated on drawings.

3. COMMISSIONING OF ELECTRICAL SYSTEMS

3.1 StartUp

- 3.1.1 Startup equipment to NETA ATS standards.

3.2 Conduct Following Tests

- 3.2.1 Insulation resistance testing:
 - 3.2.1.1 Megger circuits, feeders and equipment up to 350 V instrument.
 - 3.2.1.2 Meggers 350-600 V circuits, feeders and equipment with a 1000 instrument.

3.3 Load Balancing

- 3.3.1 Measure phase current to panelboards with normal loads (lighting) operating at time of acceptance; adjust branch circuit connections as required to obtain best balance of current between phases and record changes. Balance the loading on feeders so that unbalanced load is less than 10 per cent.
- 3.3.2 Measure phase voltages at loads and adjust transformer taps to within 2% of rated voltage of equipment
- 3.3.3 Provide upon completion of work, load balance report: phase and neutral currents on panelboards, dry-type transformers and motor control centres, operating under normal load, as well as hour and date on which each load was measured, and voltage at time of test.

3.4 Commissioning Of Lighting:

- 3.4.1 Functional testing of lighting to be performed by a third party or manufacturer's representative.
- 3.4.2 Lighting control devices and control systems shall be tested to ensure that control hardware and software are calibrated, adjusted, programmed, and in proper working condition in accordance with the construction documents and manufacturer's installation instructions.
- 3.4.3 When occupant sensors, time watches, programmable schedule controls, or photosensors are installed, at a minimum, perform the following procedures:
 - 3.4.3.1 Confirm that the placement, sensitivity and time-out adjustments for occupant sensors yield acceptable

performance, lights turn off only after space is vacated and do not turn on unless space is occupied.

3.4.3.2 Confirm that time switches and programmable schedule controls are programmed to turn the lights off.

3.4.3.3 Confirm that photosensor controls reduce electric lights levels based on the amount of usable daylight in the space as specified.

4. INSTRUMENTATION AND CONTROL FOR ELECTRICAL SYSTEMS

4.1 Lighting Control Devices

4.1.1 Occupancy Sensors, Time Switches, etc.

4.1.1.1 As described in applicable schedules.

4.1.2 Dimming Switches

4.1.2.1 Provide dimmers with linear slide controls, and sized to suit loads controlled for fluorescent, incandescent, low voltage magnetic and low voltage electronic lighting as indicated.

4.1.2.2 All dimmers shall incorporate an air gap which shall be accessible without removing the faceplate.

4.1.2.3 Dimmer shall meet CSA C22.2 no. 111-10 and CSA C22.2 no. 181-15 limited short circuit test requirements for snap switches;

4.1.2.4 Dimmer shall meet ANSI/IEEE C62.41.1-2002 and ANSI/IEEE C62.41.2-2002, tested to withstand voltage surges of up to 6000 V and current surges of up to 200 A without damage. Manufacturer shall provide file card upon request showing their compliance with the above standards.

4.1.2.5 Gang dimmers shown side by side on plans under one seamless, multi-gang faceplate.

4.1.2.6 Dimmers: rated 1000 W, unless otherwise noted.

4.1.2.7 Finish colour by architect/designer.

4.1.2.8 Manufacturers: Lutron Nova T series or approved equal.

5. LOW-VOLTAGE TRANSFORMERS

5.1 Low-Voltage Transformers

5.1.1 Dry type transformers to CSA C22.2 No.9-17, CSA C22.2 No. 47-13 (R2018), and CAN/CSA-C802.2-18 with the following features:

5.1.1.1 CSA type 2 drip-proof enclosure.

5.1.1.2 Comply with ANSI, NEMA, and IEEE Standards.

5.1.1.3 Final coating to be ANSI 61 grey epoxy power.

- 5.1.1.4 60 Hz operating frequency, 600-120/208 V, 3 ϕ , delta-wye 3-phase with 3-coil, ANN type.
- 5.1.1.5 Four (4) taps, 2xFCAN and 2xFCBN with 2.5% per tap.
- 5.1.1.6 Copper windings.
- 5.1.1.7 Epoxy impregnation, anti-vibration pads, electrostatic shield.
- 5.1.1.8 220 insulation class and 115°C (239°F) winding temperature rise.
- 5.1.1.9 To be wall mounted for 45 kVA or less unless otherwise noted.
- 5.1.1.10 Heavy gauge steel with rust and corrosion protection.
- 5.1.1.11 1-2 kV class with 10 kV BIL.
- 5.1.1.12 Double neutral connector.
- 5.1.2 Meet or exceed the nominal efficiencies shown in Table 8.1 of ASHRAE 90.1-2013.
- 5.1.3 Average sound levels:
 - 5.1.3.1 45 dB max up to 45 kVA.
 - 5.1.3.2 50 db max up to 150 kVA.
 - 5.1.3.3 55 db max up to 300 kVA.
 - 5.1.3.4 60 db max up to 500 kVA.
- 5.1.4 Manufacturers:
 - 5.1.4.1 STI.
 - 5.1.4.2 Delta Transformer.
 - 5.1.4.3 Hammond.
 - 5.1.4.4 Powersmiths.
 - 5.1.4.5 Square D by Schneider Electric.
- 5.1.5 T-connected transformers are not acceptable.

6. **SWITCHBOARDS AND PANELBOARDS**

6.1 **Lighting And Receptacle Panelboards**

- 6.1.1 To CSA 22.2 no 29-15 with the following features:
 - 6.1.1.1 250 V panelboards: bus and breakers rated for 10 000 asymmetrical interrupting capacity, or as indicated.
 - 6.1.1.2 Sequence phase bussing with odd numbered breakers on left and even on right, with each breaker identified by permanent number identification as to circuit number.
 - 6.1.1.3 Panelboards: mains, number of circuits, and number and size of branch circuit breakers as indicated.
 - 6.1.1.4 Two keys for each panelboard and key panelboards alike.

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- 6.1.1.5 Copper bus with full size neutral.
- 6.1.1.6 Mains suitable for bolt on breakers 25 mm (1 inch) or 19 mm (3/4 inch) wide.
- 6.1.1.7 Finish trim and door baked grey enamel.
- 6.1.2 Molded case circuit breakers to CSA C22.2 no. 5-16.
- 6.1.3 Bolt-on molded case circuit breaker, quick-make, quick break type for manual and automatic operation with temperature compensation for 40°C (104°F) ambient.
- 6.1.4 Common-trip breakers with single handle for multi-pole applications.
- 6.1.5 All panels to be flush or surface mounted as indicated.
- 6.1.6 Lock-on devices on emergency lighting, night lights, security and exit light circuits.
- 6.1.7 Breakers feeding motors: motor rated.
- 6.1.8 Breakers for lighting circuits: switch rated.
- 6.1.9 Circuit breakers feeding transformers rated accordingly.

7. LOW-VOLTAGE DISTRIBUTION EQUIPMENT

7.1 Indoor Service

- 7.1.1 Two channel service pole, Wiremold NP800 series, or equal. Provide devices as indicated on plans.
- 7.1.2 Poles bolted to floor and secured at ceiling level.

7.2 Wiring Devices

- 7.2.1 Switches
 - 7.2.1.1 Manually operated AC switches to CSA C22.2 no. 111-10 (R2015).
 - 7.2.1.2 Snap switches to CSA C22.2 no. 55-15.
 - 7.2.1.3 15A and 20A-120V, single pole, double pole, three-way, and fourway switches with pilot lights and or key operator as indicated.
 - 7.2.1.4 Switches of one manufacturer throughout Project.
 - 7.2.1.5 Finish colour as selected by Architect. Confirm colour prior to ordering.
 - 7.2.1.6 Provide specification grade local 20A, 120V and 20A, 347V switches, AC type with matching cover plate:
 - 7.2.1.7 120 volt:
 - 7.2.1.7.1 P&S #26021 series
 - 7.2.1.7.2 Hubbell #2121 series
 - 7.2.1.8 347 volt:

7.2.1.8.1 P&S #2601-347 series

7.2.2 Receptacles

- 7.2.2.1 Receptacles, plugs and similar wiring devices to CSA C22.2 no. 42-10, specification grade.
- 7.2.2.2 Duplex or single receptacles, CSA type 5-15R, 125V, 15A, Uground, with the following features:
 - 7.2.2.2.1 Suitable for no. 10 AWG for back and side wiring,
- 7.2.2.3 Break-off links for use as split receptacles.
- 7.2.2.4 Eight (8) back wired entrances, four (4) side wiring screws.
- 7.2.2.5 Double wipe contacts, and riveted grounding contacts.
- 7.2.2.6 Provide specification grade 15A. 120 volt, "U" ground receptacles, duplex type with matching cover plates, colour by Architect:
 - 7.2.2.6.1 P&S #26252 series
 - 7.2.2.6.2 Hubbell #2152 series
 - 7.2.2.6.3 Other receptacles with ampacity and voltage as indicated.
- 7.2.2.7 Receptacles of one manufacturer throughout project.
- 7.2.2.8 Controlled receptacles: Permanently marked to visually differentiate them from uncontrolled receptacles.

7.2.3 Cover Plates

- 7.2.3.1 Cover plates for wiring devices to suit the wiring device.
- 7.2.3.2 Cover plates from one manufacturer throughout project.
- 7.2.3.3 Sheet steel utility box cover for wiring devices installed in surface mounted utility boxes in service areas.
- 7.2.3.4 Stainless Steel cover plates for all flush mount boxes.
- 7.2.3.5 Stainless Steel cover plates for all surface mount cast boxes in finished areas.
- 7.2.3.6 Where exposed to the weather, cover plates suitable for wet locations whether or not a plug is inserted into the receptacle.

7.3 Low-Voltage Circuit Protective Devices

7.3.1 Fuses

- 7.3.1.1 Dimensions and Performance: CSA C22.2 No. 248 Series, Class as specified or indicated.
- 7.3.1.2 Manufacturers:
 - 7.3.1.2.1 Mersen.
 - 7.3.1.2.2 GEC.
 - 7.3.1.2.3 Littelfuse.

7.3.1.2.4 Eaton-Cooper Bussman.

7.3.1.3 Voltage: Provide fuses with voltage rating suitable for circuit phase-to-phase voltage.

7.3.1.4 Power Load Feeder Switches: HRC-1 Class J time delay type (Gould type AJT).

7.3.1.5 Other Feeder Switches: HRC-1 Class J time delay type (Gould type AJT).

7.3.2 Enclosed Switches

7.3.2.1 Fusible and non-fusible to CSA C22.2 no. 4, size as indicated.

7.3.2.2 Provision for padlocking in on-off switch position by one lock.

7.3.2.3 Mechanically interlocked door to prevent opening when handle in ON position.

7.3.2.4 Fuses: size as indicated.

7.3.2.5 Fuse holders: suitable without adaptors, for type and size of fuse indicated.

7.3.2.6 Quick-make, quick-break action.

7.3.2.7 On-off switch position indication on switch enclosure cover.

7.4 **Low-Voltage Controllers**

7.4.1 Enclosed Starters

7.4.1.1 Hand-Off-Auto combination starters in minimum CSA type 2 enclosure, complete with HRC fusing and associated controls and overload relays.

7.4.1.2 To match motor FLA and Horsepower ratings.

7.4.1.3 Manufacturers:

7.4.1.3.1 Allen-Bradley.

7.4.1.3.2 Eaton.

7.4.1.3.3 Square D by Schneider Electric.

7.4.1.3.4 Siemens.

7.5 **Interior Lighting**

7.5.1 Luminaire Supports

7.5.1.1 All lighting fixtures (existing, new & relocated) in renovated area shall be supported by approved chains which shall allow the fixtures to be supported independent of the ceiling system. A 1' x 4' fluorescent fixture shall be supported with 2 chains and a 2' x 4' fixture shall be supported with 4 chains to the roof or slab above.

7.5.2 Fluorescent Lamps and Ballasts

- 7.5.2.1 Manufacturers: GE, Philips, or Osram Sylvania.
- 7.5.2.2 Lamps: F32T8, or as indicated on schedule. 80 CRI, 4100K CCT, low mercury lamps, minimum 94% lumen maintenance and 30 000 hour lamp life.
- 7.5.2.3 Programmed Rapid Start ballasts unless otherwise indicated on schedule. Less than 10% THD, power factor greater than 0.98.

7.5.3 LED Interior Luminaires

- 7.5.3.1 Performance tested in accordance with IES LM-79, LM-80, and L70 lumen maintenance at 50 000 hours or greater calculated per IES TM-21 extrapolation.
- 7.5.3.2 Drivers minimum 0.9 power factor, THD less than or equal to 20%, 0-10 volt dimming standard, or alternate protocol to suit controls.
- 7.5.3.3 5 year warranty.
- 7.5.3.4 80 CRI minimum.
- 7.5.3.5 Luminaire efficacy in accordance with DesignLights Consortium (DLC), or Energy Star, as applicable.

7.6 Exit Signs

7.6.1 Exit Signs Per Schedule

- 7.6.1.1 Internally illuminated exit signs consisting of a green and white LED pictogram ("Running Man").
- 7.6.1.2 Certified to CSA 22.2 No.141-15, meets ISO 3864-1, and meets ISO 7010:2010.
- 7.6.1.3 Include a standard single face with optional double-faceplate included.
- 7.6.1.4 Maximum 5 Watts per face.
- 7.6.1.5 Manufacturers: Lumacell, Emergilite, Aimlite, Beghelli, Stanpro.

7.6.2 Extra Materials

- 7.6.2.1 Allow the cost for material and for installation of an additional five exit signs, single face or dual face, to be installed as directed by the consultant or building inspector during construction. Include 15.24 metres (50 feet) of wire and conduit per exit sign.

END OF SECTION

1. PROCUREMENT AND CONTRACTING REQUIREMENTS

1.1 Available Information

1.1.1 Existing condition information

1.1.1.1 Review with Owner if existing drawings are available for review. The Consultant does not warrant them for accuracy nor for completeness, and it remains the Contractor's responsibility to verify field conditions inferred from such materials.

1.1.2 Existing hazardous material information

1.1.2.1 Review with Owner if existing Designated Substance Survey (DSS) report is available for review.

1.2 General Conditions

1.2.1 Intent

1.2.1.1 Include all material, labour, equipment, and plant construction as necessary to make a complete installation as shown and specified hereinafter.

1.2.1.2 The organizational structure of the Specifications does not imply how the work is assigned to various design disciplines, trades, or subcontractors. The Master Format numbering system is not intended to determine which particular elements of the project manual are prepared by a particular discipline. Similarly, it is not intended to determine what particular work required by the project manual is the responsibility of a particular trade. It shall be the Contractor's responsibility to ensure that the systems specified hereafter are complete and operative.

1.2.2 Drawings and specifications

1.2.2.1 The drawings and specifications are complementary each to the other, and what is called for by one, is to be binding as if called for by both.

1.2.2.2 Should any discrepancy appear between the drawings and specifications which leaves the Contractor in doubt as to the true intent and meaning, a ruling is to be obtained from the Consultant in writing before submitting Tender. If this is not done, the maximum, the most expensive alternate or option, will be provided in Base Tender Bid.

1.2.2.3 The drawings provide design intent, and are not to be used to measure or quantify material. Contractor is to coordinate installation of work so as to meet the design intent.

1.3 Supplementary Conditions

1.3.1 General

1.3.1.1 The requirements of the Supplementary General Conditions apply to this Specification as though written in full herein.

1.3.1.2 Refer to interior designer drawings for exact location of dimensioned equipment and wiring devices.

1.3.1.3 Refer to interior designer drawings for additional notes which complement these specifications.

1.3.2 Health and safety requirements

1.3.2.1 Be responsible for the safety of workers and the equipment on the project in accordance with all applicable safety legislation passed by federal, provincial, and local authorities governing construction safety. The more stringent regulations prevail.

2. GENERAL REQUIREMENTS

2.1 Summary

2.1.1 Demolition of existing, reconfiguration, and new facility services to suit changes to Owner's equipment.

2.1.2 Space reconfiguration including partition modifications and associated revisions to facility services.

2.2 Project Management And Coordination

2.2.1 Project coordination

2.2.1.1 Read specifications and drawings of other trades, and conform with their requirements before proceeding with any work specified here as related to other trades.

Cooperate with all other trades on the job, so that all equipment can be satisfactorily installed, and so that no delay is caused to any other trades.

2.2.1.2 Prior to fabrication and installation of equipment, ensure that such items can be installed as indicated without interference with the structure, or the work of other trades. If any materials are fabricated or installed prior to the investigation and reaching of a solution to the possible interference problems, necessary changes shall be made at the Contractor's expense.

2.2.1.3 Provide code or manufacturer required clear space for servicing, disassembly, and removal of equipment and components.

- 2.2.2 Facility services coordination
 - 2.2.2.1 Maintain all operational building services; shutdown of services shall only take place as authorized by base building and request to be in writing.
 - 2.2.2.2 All work which shall require shutdown of electrical services and life safety system, and noise-related construction activities shall be performed on premium time. Include in the tender price for such work.
 - 2.2.2.3 Co-ordinate with Owner for scheduling of all work required to be done after office hours and weekends, i.e., drilling through slab, power shutdowns, interfacing to life safety systems, etc. all costs involved, including work to be done by the Owner's approved fire alarm and life safety systems contractor, etc., shall be at Contractor's expense.

2.3 Submittal Procedures

- 2.3.1 Before delivery to site of any item of equipment, submit shop drawings complete with all data, pre-checked by the Contractor and stamped accordingly, for review by the Consultant. Indicate project name on each brochure or sheet, make reference to the number and title of the appropriate specification section, and provide adequate space to accommodate the Consultant's review stamp(s).
- 2.3.2 Submit shop drawings to the Consultant in electronic (PDF) format, as coordinated after award of contract. Where submittals are derived from digital originals, to ensure maximum quality and legibility, do not print and rescan documents; submittals made as such will be immediately rejected.
- 2.3.3 Submit a schedule of shop drawings within one week after award of contract. Group submittals by specification division as appropriate.

2.4 Quality Requirements

- 2.4.1 Permits and fees
 - 2.4.1.1 Provide all necessary notices, obtain all required permits and pay all fees to arrange for inspection of all work.
- 2.4.2 Codes and standards
 - 2.4.2.1 Comply with current regulations of all applicable provincial and municipal codes and regulations, including, but not limited to, the Ontario Building Code, and the requirements of any Authorities Having Jurisdiction (AHJ).
 - 2.4.2.2 All equipment supplied shall conform to the regulations of CSA and the Ontario hydro.
 - 2.4.2.3 Comply with other standards as related to each trade.

2.4.3 References

- 2.4.3.1 Health Canada / Workplace Hazardous Materials Information System (WHMIS), Material Safety Data Sheets (MSDS).
- 2.4.3.2 Ontario Building Code.

2.4.4 Quality assurance

- 2.4.4.1 Qualifications: Work to be carried out by qualified, licensed tradespersons or apprentices in accordance with Authorities Having Jurisdiction. Under no circumstances shall an apprentice be permitted to work in the building unless directly supervised by a qualified tradesman on site.
- 2.4.4.2 Only first class workmanship will be accepted, not only in regards to durability, efficiency and safety, but also in regards to neatness of detail. Present a neat and clean appearance on completion. Any unsatisfactory workmanship will be replaced at no extra cost.
- 2.4.4.3 Conform to the best practices applicable to the type of work. Install all equipment and systems in accordance with manufacturers' recommendations, and consistent with the general requirements of the specification.
- 2.4.4.4 The subcontractor shall be in good standing with the workmen's compensation board and carry insurance as specified by the Ontario contractors association.

2.4.5 Inspections

- 2.4.5.1 Furnish a Certificate of Acceptance from Inspection Department on completion of work.
- 2.4.5.2 The Consultant will carry out inspections and prepare deficiency lists for action by the Contractor, during, and on completion of the Project.

2.5 Temporary Facilities And Controls

- 2.5.1 Contractor shall assume responsibility for any disruption caused by his forces to operational building services. Should temporary connections be required to maintain services during the work, supply and install all necessary equipment. Repair any system damaged during the execution of the work.

2.6 Product Requirements

2.6.1 General

- 2.6.1.1 Products certified by a recognized testing agency accredited by the Standards Council of Canada, and bear a certification mark from that agency, for example the CSA certification mark, cUL listing, or ULC listing. Where

certified or listed material and equipment is not available, obtain special approval from Authority Having Jurisdiction before delivery to project site, and submit the approval to the Consultant.

2.6.1.2 Product described in this specification are considered to be the minimum standard of acceptance.

2.6.1.3 All materials to meet flame spread rating requirements of all Authorities Having Jurisdiction.

2.6.2 Substitution of specified equipment

2.6.2.1 "Approved equal" shall be defined as an alternate approved by the Consultant. No substitutions shall be made without written approval.

2.6.2.2 If during the Tender bid process, the bidding Contractor wishes to substitute the specified equipment for an "approved equal", the bidding Contractor must submit Shop Drawings to the Consultant before the Tender close, for approval. If no substitution request is made, the as specified equipment is that to be provided.

2.6.3 Product storage and handling requirements

2.6.3.1 Store all equipment and materials in dry locations.

2.6.3.2 Protect all equipment from weather and construction debris until substantial completion is acknowledged.

2.7 Execution Requirements

2.7.1 Examination and preparation

2.7.1.1 Prior to submitting Tender, the Contractor shall carefully examine the Site and ascertain all conditions which affect the Work.

2.7.1.2 No extras will be allowed for work resulting from conditions that would have been evident upon a thorough examination of electrical closets, rooms and ceiling spaces, whether exposed or not.

2.7.1.3 Verify location and sizes of existing systems have adequate capacities to accommodate new loads.

2.7.1.4 Electrical contractor to feed and install all power required in new office furniture. All ends to be terminated with approved receptacles in new office furniture.

2.7.2 Execution

2.7.2.1 Location of outlets

2.7.2.1.1 The Consultant reserves the right to change the location of outlets to within 3 m (10 feet) from the point indicated on the drawings

- without extra charge, providing the Contractor is advised before installation is made.
- 2.7.2.1.2 Refer to architectural drawings for locations and mounting heights of outlets, lighting control devices, thermostats, etc.
- 2.7.2.1.3 Electrical contractor to hardware, terminate and verify power following new office furniture installation.
- 2.7.3 Cutting and patching
- 2.7.3.1 All cutting and patching required by the Contractor shall be performed by the Contractor. All such work shall be done by tradesmen skilled in and certified for this particular trade.
- 2.7.3.2 Provide fire barriers around all components in holes which penetrate fire separations. The fire barrier medium provided shall make the fire separation equal to or better than the one which was cut away. All materials shall be CSA approved and UL listed.
- 2.7.3.3 Provide access panels and doors required for this work.
- 2.7.3.4 Restore finishes to match existing surroundings.
- 2.7.3.5 Where slabs and foundation walls are to be core-drilled and openings to be cut, all locations shall be X-rayed prior to drilling or saw cutting.
- 2.7.3.6 All X-raying shall be done after 21:00 hour and in accordance with the requirements of the authorities having jurisdiction. Only personnel qualified in the use of the type of equipment required to x-ray the sawcuts or drilling shall be permitted to perform this work on the site. No allowance will be made later for expenses incurred through the failure of performing these X-rays.
- 2.7.3.7 Provide ample notice and coordinate this work with Owner for time, duration and locations required and adhere to the Owner's requirements. No sawcuts or drilling shall proceed without prior written consent of the Owner. Retain and pay for the services of building structural consultant, for reviewing and approving building structure to be cut.
- 2.7.3.8 For work to be carried out in other tenant's space, general contractor shall include costs of security guard services as required by the Owner.
- 2.7.3.9 All noise related construction activities such as drilling and floor coring shall be restricted to after regular working hours and approved by the owner. To be completed at the contractors expense.

2.8 Closeout Procedures

2.8.1 Building permit compliance

2.8.1.1 Prior to requesting the Consultant's letter "Review of General Conformance" for submission to the municipal building department to allow occupancy, the following items must be complete and submitted to the Consultant, as applicable:

2.8.1.1.1 Electrical

- (1) Provide Certificate of Acceptance from Electrical Inspection Department.
- (2) Any devices not installed must have wiring made safe and terminated in an outlet box complete with cover.
- (3) All outlets must have cover plates installed. All electrical equipment not located in service rooms must have covers and/or doors installed complete.

2.8.1.1.2 Emergency lighting

- (1) Emergency lighting system must be operational and tested by Contractor. Where battery units and remote heads are indicated on the drawing, provide certification letter from equipment manufacturer indicating the system meets code requirements.
- (2) If the building is provided with emergency power with CSA C282 equipment (emergency generator or similar), the contractor is to perform light meter measurements and submit a letter indicating the system meets code requirements.
- (3) Simulate normal power failure within the premises in the presence of the consultant and the owner's representative. Test and verify exit lights and emergency lighting operations under emergency conditions. Submit letter of certification copy to Owner stating that the systems have been tested, witnessed by the consultant and the

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Owner's representative, etc., and the methods of installation and performance are satisfactory to all parties.

- (4) All exit lights must be installed and operational.

2.8.1.1.3 Electronic safety and security

- (1) Fire alarm system and devices must be operational. Submit fire alarm verification report per CAN/ULCS537, and submit audibility test. Indicate tap settings of all signaling devices.
- (2) If any of the above items have not been completed at the time of Consultant's Inspection, and the letter of "assurance of professional field review and compliance" cannot be issued, any costs for subsequent Inspections will be charged to the Contractor.

2.8.2 Substantial performance

2.8.2.1 Prior to requesting Substantial Performance Inspection, the following items must be complete and submitted to the Consultant, as applicable.

2.8.2.1.1 General

- (1) Project record drawings must be submitted to Consultant for review.
- (2) Maintenance manuals must be submitted to Consultant for review.

2.8.2.1.2 Electrical

- (1) Provide final Certificate of Acceptance from Electrical Inspection Department.
- (2) Receptables and all direct equipment connections labelled with source and circuit number.
- (1) All panelboards provided with typewritten panel schedules.

2.8.2.2 If any of the above items have not been completed at the time of the Substantial Performance Inspection, and the Substantial Performance certificate cannot be issued, any costs for subsequent Inspections will be charged to the Contractor.

- 2.8.3 Project record documents
 - 2.8.3.1 Record drawings
 - 2.8.3.1.1 Maintain a drawing on Site, complete with red-line record of all revisions. Provide exact dimensions and routing of below-grade or below-slab services. Indicate the following:
 - (1) Electrical
All circuiting as installed and all power and systems junction box locations, as well as conduit routes.
 - (2) Coordinate access to Consultant's AutoCAD files.
 - (3) Complete record drawings accurately marked up in red ink must be submitted for review. Once reviewed, prepare as-built drawings in a neat manner, showing all deviations in work as per site redline drawing.
 - 2.8.3.2 AutoCAD as-built drawings
 - 2.8.3.2.1 On completion of Work, submit to the Consultant electronic drawings in AutoCAD and PDF format, and one full size hard copy of as-built AutoCAD files.
 - 2.8.3.2.2 Submit copies of 'As-Built' record drawings (in AutoCAD format) indicating actual circuits used and equipment installed on site and final unconditional certificate of approval from ESA and Building Inspection Department to Owner.
- 2.8.4 Warranties
 - 2.8.4.1 Submit a written guarantee to the Owner for two years from the date of acceptance. This guarantee shall bind the Contractor to correct, replace or repair promptly any defective equipment workmanship without cost to the Owner.
 - 2.8.4.2 Provide extended warranties as specified.
- 2.8.5 Operation and maintenance (O&M) manuals
 - 2.8.5.1 At the end of the project, submit 3 copies of closed out documents in 3 ring binders containing new equipment shop drawings reviewed by the consultant, hydro inspection certificate, warranty certificate, fire alarm

verification certificate with detailed technician's test report, as-built drawings (electronic and hard copy), permit closure notice.

3. WOOD, PLASTIC, AND COMPOSITES

3.1 Rough Carpentry

3.1.1 Fire-retardant plywood board

3.1.1.1 Pre-treated fire-retardant plywood board in locations as indicated.

3.1.1.2 Paint plywood board as directed by interior designer. Leave fire retardant label unpainted for verification by Consultant and by Authority Having Jurisdiction AHJ.

4. FIRE AND SMOKE PROTECTION

4.1 Firestopping

4.1.1 Provide approved firestopping material to maintain integrity of fire separations.

4.1.2 Manufacturers: 3M, AD Fire Protection, Hilti, or approved equal.

4.1.3 Before starting any work on site, submit detailed shop drawings to the Consultant for review and comments. Include the following information:

4.1.3.1 Manufacturer's technical product data and installation instructions for each specific type and location of penetration; certification that proposed firestopping materials and assemblies comply with CAN4-115-M.

4.1.3.2 For each specific type and location of penetration, provide installation instructions from a recognized independent testing agency.

4.1.3.3 Mark penetration types and locations on set of white prints. At completion of project, transfer this information to "as-built" drawings.

5. OPENINGS

5.1 Access Doors And Panels

5.1.1 Access doors

5.1.1.1 Provide access doors for new and existing concealed valves, dampers, junction boxes, equipment, etc.

5.1.1.2 Access doors to match wall and gypsum ceilings.

5.1.1.3 Use recessed type access doors in gypsum ceilings/

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- 5.1.1.4 Provide access doors wherever equipment, valves, dampers, control devices, etc., are concealed behind walls or inaccessible ceilings.
- 5.1.1.5 Access doors flush to edge of frame, concealed continuous hinge with screwdriver operated cam latch. Door construction to be minimum 14 gauge with 16 gauge frame. Fire-rated door construction to be a minimum 20 gauge insulated door with 16 gauge frame. Insulation thickness to provide required rating.
- 5.1.1.6 Size doors to allow adequate operating/maintenance clearance for devices. Body entry: 600 mm x 600 mm (24 inch x 24 inch). Hand entry: 300 mm x 300 mm (12 inch x 12 inch), unless noted otherwise.
- 5.1.1.7 Acceptable manufacturers: Acudor model as per assembly, or equal by LeHage:
 - 5.1.1.7.1 Concealed plaster: PS-5010
 - 5.1.1.7.2 Concealed drywall: DW-5015
 - 5.1.1.7.3 Existing drywall: DW-5040
 - 5.1.1.7.4 Fire-rated: FW-5050/FB-5060 to match assembly.

END OF SECTION

1. **GENERAL**

1.1 **Owner's Standard**

- 1.1.1 In accordance with Peel Regional Police communications document. Refer to Owner's (Peel Regional Police) "Peel Regional Police Network Cabling Specifications", 12th February 2019, or latest version, bound separately.
- 1.1.2 Communication contractor must be Panduit certified.
- 1.1.3 Provide two (2) Panduit UTPSP10BUY patch cables for each installed data jack at workstation end. Verify exact lengths of patch cables with Owner prior to ordering.
- 1.1.4 Provide one (1) Panduit UTP28SP7BU patch cable for each installed data jack at Telecom Room end. Verify exact lengths of patch cables with Owner prior to ordering.
- 1.1.5 Provide three (3) Panduit CPPLA48WBL Y Mini-Com 48-port 2RU modular patch panels with labels and label covers in Telecom Rooms.
- 1.1.6 Communications contractor to feed install all data required in new office furniture. All data ends to be terminated with approved data jacks.

END OF SECTION

1 FIRE ALARM SYSTEMS

1.2 Manufacturers

- 1.2.1 Existing fire alarm system to remain.

1.3 Submittals

- 1.3.1 In accordance with Section 00 00 00 Electrical General Requirements.
- 1.3.2 Product Data: Provide electrical characteristics and connection requirements.
- 1.3.3 Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by Product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of products.
- 1.3.4 Shop Drawings:
 - 1.3.4.1 Sufficient information, clearly presented, shall be included to determine compliance with drawings and specifications.
 - 1.3.4.2 Include manufacturer's name(s), model numbers, ratings, power requirements, equipment layout, and device arrangement.
 - 1.3.4.3 Show annunciator layout and main control panel module layout, configurations and terminations.
 - 1.3.4.4 Show device layout, complete riser diagram, and auxiliary functions.
 - 1.3.4.5 The supplier of the system shall prepare a complete zoning schedule and artwork layout for passive graphic to be included with submittal package.
- 1.3.5 Conduit and Wire for Fire Alarm System
 - 1.3.5.1 Conduit: In accordance with Section 26 00 00.
 - 1.3.5.2 Conduit shall be in accordance with the Electrical Safety Authority (ESA), local and provincial requirements.
 - 1.3.5.3 All wiring shall be installed in conduit or raceway.
 - 1.3.5.4 Fire Alarm Cable
 - 1.3.5.5 Conductors: 300V rated multiconductor to manufacturer's requirements, insulated, colour coded, copper conductor, minimum size to be #16 AWG for device loops and 14 AWG for signal circuits.
 - 1.3.5.6 Certified by CSA as fire alarm and signal cable type FAS 105 to CSA C22.2 No. 208.
- 1.3.6 Signalling and Annunciation Devices
 - 1.3.6.1 Manual pull stations, smoke detectors, horns, and strobes to suit the existing system.

- 1.3.6.2 If required, provide input modules to suit supervision and monitoring of sprinkler supervisory and flow zones.
- 1.3.7 Installation
 - 1.3.7.1 To CAN/ULC-S524-14 and the manufacturer's manuals and wiring diagrams.
 - 1.3.7.2 The contractor shall furnish all labour, conduit, wiring, outlet boxes, junction boxes, cabinets and similar devices necessary for a complete, functional life safety fire alarm system.
 - 1.3.7.3 Provide all necessary power supply, interconnecting and remote signal wire in dedicated conduit throughout and installed in accordance with the manufacturer's wiring diagrams and the requirements of the Canadian Electrical Code and the Inspection Authority.
 - 1.3.7.4 All penetration of floor slabs and fire walls shall be fire stopped in accordance with all local fire codes.
 - 1.3.7.5 Power supply:
 - 1.3.7.6 Connect fire alarm system power supply to a dedicated circuit.
 - 1.3.7.7 Circuit breaker(s) feeding fire alarm system to be coloured red, clearly labelled, and be locked in the ON position.
 - 1.3.7.8 Wiring:
 - 1.3.7.9 Install all wiring in metal raceways.
 - 1.3.7.10 Provide wiring suitable for fire alarm circuits.
 - 1.3.7.10.1 Class "B" wiring for initiating circuits.
 - 1.3.7.10.2 Class "B" wiring for signaling circuits.
 - 1.3.7.11 Provide separate signalling circuits for horns and strobes.
 - 1.3.7.12 End-of-line resistors shall be furnished as required for mounting as directed by the manufacturer on Class B circuits.
 - 1.3.7.12.1 Install EOL resistors maximum 1800 mm above finished floor in interior spaces.
 - 1.3.7.13 Install manual pull stations at 1200 mm above finished floor.
- 1.3.8 Verification
 - 1.3.8.1 To CAN/ULC-S537-13.
Provide audibility test of signaling devices after other systems have been commissioned to verify operation at ambient sound levels. Submit report to consultant. Refer to drawing note for exact requirement.

END OF SECTION

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Division	Finish Code	Manufacturer	Series Pattern	Finish/ Colour	Size	Remarks
DIVISION 8 OPENINGS						
08 14 16 Flush Wood Doors						
	VN/ST		Match Existing	Match Existing	Refer to drawing	1. On-site mock up to match existing door colours. 2. Shop stain finish
DIVISION 9 FINISHES						
09 30 13 Ceramic Tiling						
	WT-1	Royal Mosa	Murals Blens	31010 Bright White Stone Matte/31510 Bright White Plain Gloss	12"x24"	Shower Room wall tile [dry area]
	WT-2	Olympia Tile	Quebec	Graphite	2"x2"	Shower Room wall tile [wet area]
	TL-1	Unicom Starker	Icon Compact	Gun Powder	12"x24"	Locker Room Floor tile
	TL-2	Unicom Starker	Icon Compact	Jet Black	12"x24"	Locker Room and Shower Room [dry area] Floor tile
	TL-3	Olympia Tile	Quebec	Graphite	2"x2"	Shower Room floor tile [wet area]
	B-1	Unicom Starker	Icon Compact	Jet Black	4" high	Locker Room tile base with Schluter top cap
09 65 00.08 Resilient Flooring for Minor Works						
	AS-1	Flexco	ESD Control Static Dissipative	#69 White Blue		Wall Base B-2
	B-2	Mohawk	Straight cut vinyl base AWB 01	White	4" high	

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Division	Finish Code	Manufacturer	Series Pattern	Finish/ Colour	Size	Remarks
	TR-1	Schluter	Schiene Single Spacer	Satin Anodized Aluminum		Tile to VCT/SDT/LVT
09 68 13 Tile Carpeting						
	CR-1	Interface	Chenille Warp 1 # 14629	Nostalgia #1746		Wall Base B-2
09 91 23 Interior Painting						
	PT-1	Para Paints		#SW 6231 Rock Candy		General paint Eggshell finish
	PT-2	Para Paints		#10BB 15/154 Soaring Eagle		Doors & Frames Semi-gloss finish
	PT-3	Para Paints		#SW 6231 Rock Candy		Doors, Semi-Gloss finish
	PT-4	Sherwin Williams		#244-C3 Dorian Gray		Door Frames, Semi-Gloss finish
	PT-5	Benjamin Moore		#CC-30 Oxford White		Drywall ceiling, Flat finish
22 00 00 Plumbing						
	B-1 Basin	American Standard	Murro	Vitreous China, white		Refer to mechanical drawing and Division 22
	B-1 & B-2 Faucet	Delta	Electronic Faucet 591T0228TR	Stainless Steel		Refer to mechanical, electrical drawing and Division 22
	B-2 Basin	American Standard	Lucerne	White		Refer to mechanical drawing and Division 22

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Division	Finish Code	Manufacturer	Series Pattern	Finish/ Colour	Size	Remarks
	SH-1 Shower Head – Barrier-Free	Delta	Teck T17TH155	Stainless Steel		Refer to mechanical drawing and Division 22
	SH-2 Shower Head	Delta	Teck T17TH135	Stainless Steel		Refer to mechanical drawing and Division 22
	WC-1 Toilet	American Standard	Madera Flowise 3461.001	Vitreous China, White		Refer to mechanical drawing and Division 22
	WC-2 Toilet	American Standard	Madera Flowise 3451.001	Vitreous China, White		Refer to mechanical drawing and Division 22
26 00 00 Lighting Fixtures						
	A Pot Light	Halo Commercial	HC4-20-D010347-HM4-0525-84041-MD-H-WF	White Flange	4" diameter	Shower pot light [drywall ceiling]
	L2	MontBlanc	Evolve AE-RC-MB-CA-22 LB-N-40-010-WH	White	2'x2'	Recessed T-Bar LED
	L4	MontBlanc	Evolve AE-RC-MB-CA-24 LB-N-40-010-WH	White	2'x4'	
	X Series	Ecoglo	RM-__50-CA			Exit Sign

END OF SECTION

DIGITAL BID BOND

BOND NUMBER _____

KNOW ALL MEN BY THESE PRESENTS THAT _____
as Principal, hereinafter called the Principal, and

_____ a corporation
created and existing under the laws of Ontario, and duly authorized to transact the business of Suretyship
in Ontario as Surety, hereinafter called the Surety, are held and firmly bound unto The Regional
Municipality of Peel as Oblige, hereinafter called the Oblige, in the amount of

_____ Dollars,

(\$ _____) lawful money of Canada, for the payment of which sum, well and
truly to be made, the Principal and the Surety bind themselves, their heirs, executors, administrators,
successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a written Bid to the Oblige, dated the _____ day of
_____, 20____,

for: _____
DESCRIPTION OF WORK

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if the aforesaid Principal
shall have the Bid accepted within ninety (90) days from the Closing Date and the said Principal will,
within the time required, enter into a formal contract and give the specified security to secure the
performance of the terms and conditions of the Contract, then this obligation shall be null and void;
otherwise the Principal and the Surety will pay unto the Oblige the difference in money between the
amount of the Bid of the said Principal and the amount for which the Oblige legally contracts with
another party to perform the work if the latter amount be in excess of the former.

The Principal and the Surety shall not be liable for a greater sum than the specified penalty of this Bond.

Any suit under this Bond must be instituted before the expiration of seven months from the date of this
Bond.

IN WITNESS WHEREOF, The Principal and the Surety have signed and sealed this Bond this _____
day of _____, 20____.

SIGNED, SEALED AND DELIVERED

SIGNATURE OF WITNESS
(if not signed under corporate seal)

By _____ (Seal)
SIGNATURE AND SEAL OF PRINCIPAL
I/We have the authority to bind the Corporation

NAME OF WITNESS (PRINTED)

SURETY (Seal)

By _____
ATTORNEY-IN-FACT

ADDRESS AND PHONE NUMBER OF SURETY

Appendix 5.6

Form of Release at Substantial Performance of the Work

Date: _____
Owner: _____
Contractor: _____
Document Number: _____
Project: _____
Applicable Invoice: _____

Context

- A. The Contractor identified above (the “Contractor”) and the Regional Municipality of Peel entity, government, agency, or board identified above as the Owner (the “Owner”) entered into a contract dated _____ (the “Contract”) pursuant to the procurement document number identified above for the Contractor to provide certain work and services in respect of the project identified above (the “Project”).
- B. Capitalized terms used but not defined in this Release have the meanings given to them in the Agreement.
- C. Pursuant to the Contract, the Contractor is providing this Release to the Owner in support of its application for payment of holdback upon Substantial Performance of the Work.

Release

- 1. Except for the claims set out in section 2, as of the date set out above, the Contractor on its own behalf and on behalf of its successors and assigns hereby irrevocably waives, releases, and forever discharges the Owner and its directors, officers, Region of Peel council members, representatives, employees, contractors, agents, and their respective successors and assigns (the “Released Group”) from any and all claims, changes, disputes, complaints, liabilities, obligations, damages, actions, causes of action, proceedings, debts, demands, losses, and expenses whatsoever, at law and in equity, which it may have had, may now have, or may have arising out of or in connection with the Contract (“Claims”).
- 2. The Contractor does not release the Released Group from the following Claims:
 - a. Claims for any sums retained by the Owner for the Warranty Holdback;
 - b. Claims arising from Work which remains to be completed by the Contractor on the Project as at the date of this Release;
 - c. Claims which cannot be waived under the *Construction Act* (Ontario); and
 - d. the following Claims (including any outstanding Claims about which the Contractor has previously notified the Owner and attach additional page if necessary):

Appendix 5.6

Form of Release at Substantial Performance of the Work

- The Contractor acknowledges and agrees that if it leaves Section 2.d. blank or responds “none” in Section 2.d., the Contractor is deemed not to have reserved any Claims other than those in Sections 2.a., 2.b., and 2.c.
3. Except for the Claims set out in Section 2.d., Contractor’s managerial or senior supervisory personnel do not know, or have reason to know based on good and prudent industry practices, of any potential or actual claims that are required to be notified to Owner according to the requirements of the Contract as of the date of this Release.
 4. This Release is freely and voluntarily given and the Contractor acknowledges and represents that it has fully reviewed the terms and conditions of this Release and that it is fully informed with respect to the legal effect of this Release.

General

5. No provision of this Release which may be deemed unenforceable shall in any way invalidate any other provision hereof, all of which shall remain in full force and effect.
6. This Release shall be binding upon, and shall inure to the benefit of, the Contractor, the Owner, and their respective heirs, successors, legal representatives and assigns.
7. This Release and the Contract constitute the entire agreement between the parties with respect to the subject matter hereof and supersedes all prior and contemporaneous agreements. No change or waiver shall be valid unless in writing and signed by an authorized representative of the party against whom such change or waiver is sought to be enforced.
8. This Release may be executed and delivered electronically.
9. This Release is governed by the laws of Ontario and the federal laws of Canada applicable therein. Any dispute arising out of this Release shall be governed by the terms of the Contract.

[INSERT FULL CORPORATE NAME OF CONTRACTOR]

By: _____

Name: _____

Title: _____

I have authority to bind the corporation.

**2024-354T - GENERAL CONTRACTING SERVICES FOR
RENOVATIONS AT 180 DERRY ROAD, MISSISSAUGA PEEL
REGIONAL POLICE**

Date Issued: July 12, 2024 2:45 PM

Schedule of Prices

*Denotes a "MANDATORY" field

Do not enter \$0.00 dollars unless you are providing the line item at zero dollars to the Owner.

If the line item and/or table is "NON-MANDATORY" and you are not bidding on it, leave the table and/or line item blank.Do not enter a \$0.00 dollar value.

TOTAL PRICE

Prices below shall be quoted in Canadian dollars and shall be ALL INCLUSIVE. All pricing submitted shall include all travel time expended between their place of business and any Agency’s facility located within the Regional Municipality of Peel, employee benefits, statutory holidays, training, uniforms, materials, equipment, overhead costs, profits and all other charges, except HST.

No additional payments will be made to the Bidder for any unforeseen or additional Work without prior approval by the Agency. It is the responsibility of the Bidder to know the extent of the Work required to successfully complete the Work per the Agency’s direction.

Description	Lump Sum Price *	Total Price
Stipulated Price for General Contracting Services for Renovations at 180 Derry Road, Mississauga Peel Regional Police		
Subtotal:		

CASH ALLOWANCE

Cash Allowance: Payment for this work shall be from the Cash Allowance on the basis of time and materials or quoted fixed price, as agreed to prior to work proceeding. Unexpended portions of this allowance will be deducted from the Contract Price.

Description	Lump Sum	Total Cash Allowance
Security	\$6,000.0000	\$ 6,000.0000
Cabling	\$47,000.0000	\$ 47,000.0000
Security Furniture	\$6,000.0000	\$ 6,000.0000
Office Furniture	\$120,000.0000	\$ 120,000.0000
Subtotal:		\$ 179,000.0000

PRICE BREAKDOWN

Provided a high level breakdown of the bid submission as indicated below.

Description	Cost *
Electrical Scope	
Plumbing and Mechanical Scope	

FEE FOR CHANGES IN THE WORK

If a specific fee for a change is not agreed prior to the performance of the services in respect of the change, the fee shall be at an hourly rate of:

Description	Hourly Rate *
Electrical	
Communication	
Painting	
Drywall	
Site Supervisor	
General Labour	
Carpenter	
Framer	
Plumber	

Summary Table

Bid Form	Amount
TOTAL PRICE	
CASH ALLOWANCE	\$ 179,000.0000
Grand Total (exclusive of taxes):	

Bid Questions

Please provide in the space below your GST/HST Registration Number. Please note that all invoices provided to the Agency must show the GST/HST Registration Number and show this tax on a separate line.

Specifications

CONTACT INFORMATION

In the space provided please list the contact names and numbers during the times indicated below.

Line Item	Description	Regular Hours Service (7:00 a.m. - 5:00 p.m.) *	After Hours Service (5:00 p.m. - 7:00 a.m.) *	Saturdays, Sundays and Holidays *
1	Name			
2	Phone number			
3	Cellular number			
4	Email			

Sub-Contractors

LIST OF PROPOSED MAJOR SUB-CONTRACTORS

The Bidder must complete this table listing the names of each proposed subcontractor to be used whose Work is valued at \$500,000 or more. The Bidder must also list the part of the Work each subcontractor is to carry out and the value of each such part of the Work of which 50 per cent Performance and 50 per cent Labour and Material Payment Bonds are required by the Instruction to Bidders section of the Document.

Part of Works or Sub-trade	Proposed Subcontractor	Value of Work

Documents

It is your responsibility to make sure the uploaded file(s) is/are not defective or corrupted and are able to be opened and viewed by the Owner. If the attached file(s) cannot be opened or viewed, your Bid Call Document may be rejected.

BONDING UPLOAD SECTION

- Digital Bid Bond * (mandatory)
- Agreement to Bond * (mandatory)

Declarations & Addenda

This Bidder Submission is made entirely in accordance with the Document. By completing the information below and by submitting an online response to the Document, it is deemed that the Bidder has read and agreed to abide by all of the terms and conditions contained in the Document and that you have the authority to bind the Bidder and submit this Bidder Submission on behalf of the Bidder.

I acknowledge in my acceptance of the terms and conditions below the following requirements for Accessibility for Ontarians with Disabilities, [Health & Safety Compliance Certificate & Appendix A](#) and [Code of Conduct](#):

Contracted employees, third party employees, agents and others who deal with members of the public on behalf of the Region of Peel or participate in the development of policies, practices and procedures governing the provision of goods or services to members of the public must meet the requirements of the Accessibility for Ontarians with Disabilities Act 2005 and its Regulations with regard to training and the provision of goods or services to persons with disabilities. A document describing the training policy, a summary of the contents of the training and details of training dates and attendees must be submitted to the Region of Peel upon request. If a training policy is not yet in place, complete the training module at the following website: [accessforward.ca](#).



I/WE agree to be bound by the terms and conditions in the Document and have authority to bind the Bidder and submit this Bidder Submission on behalf of the Bidder.

The bidder shall declare any potential conflict of interest as defined in the Standard Terms and Conditions that could arise from submitting a bidder submission for this document. Do you have a potential conflict of interest?

☒ Yes ☐ No

The Bidder acknowledges and agrees that the addendum/addenda below form part of the Bid Document

Please check the box in the column "I have reviewed this addendum" below to acknowledge each of the addenda.

File Name	I have reviewed the below addendum and attachments (if applicable)	Pages
There have not been any addenda issued for this bid.		