PETERBOROUGH HOUSING CORPORATION

Peterborough Housing Corporation
526 McDonnel St.
Peterborough, ON K9H 0A6

Phone: 705-742-0439
Toll Free: 1-833-824-4687
Web: ptbohousingcorp.ca

BARRY BRYAN ASSOCIATES
Architects, Engineers, Project Managers

250 Water Street
Suite 201
Whitby, Ontario
Canada
L1N 0G5

Telephone: 905 666-5252
Fax: 905 666-5256
Email: bba@bba-archeng.com
Web Site: www.bba-archeng.com

PETERBOROUGH
HOUSING
CORPORATION

REQUEST FOR PROPOSAL

RFP-2025-002 – Woolen Mill Roof Replacement
526 McDonnel Street, Peterborough, Ontario

Issue Date: Monday, March 3, 2025, 4:30pm
Closing Date: Wednesday, March 26, 2025, 4:30pm eastern

Project 24098

End of Section

PART 1 GENERAL

1.1 General

.1 Stipulated Price tenders are invited for the supply of all labour, material, equipment and services to complete the work for the **Woollen Mill Roof Replacement, for Peterborough Housing Corporation, 526 McDonnel Street, Peterborough, Ontario**, in accordance with the Drawings and Specifications prepared by Barry Bryan Associates.

.2 Tenders from Invited General Contractors, executed and submitted will be received before **12.00 p.m on Wednesday, March 26, 2025.**

.3 Submit Tender to: The electronic procurement portal on Biddingo.com

It is the sole responsibility of the Proponent to submit their Proposal via the online tendering portal, Biddingo.

.4 The Tender Documents including the Contract Form (Canadian Standard Form of Agreement between Owner and Contractor, Canadian Standard Construction Document CCDC 2, 2008), as amended by the Supplementary General Conditions, the Instructions to Bidders, Specifications, Tender Form, and the Drawings are all complementary and shall be read together.

.5 A mandatory pre-bid meeting for Invited General Contractors will take place at **2:00 PM on Wednesday, March 12, 2025 at 526 McDonnel St, Peterborough, ON.** Failure to attend the meeting will disqualify the prospective bidder's tender. Each bidder will have the opportunity to examine the site, all areas and services which may affect the proper execution of the work. No claim for extra payment will be allowed for work or difficulties encountered due to conditions of the site which were visible or reasonably inferable prior to the date of submission of tenders.

.6 Only tenders received in accordance with these Instructions from Invited General Contractors will be accepted.

.7 Each Bidder shall examine the Tender Documents as soon as possible after receipt thereof, and should he discover any errors or omissions therein he shall notify the Consultant as soon as possible so that further instructions and/or Drawings may be issued to all Tenderers before the date set for receiving Tenders.

.8 Individual drawings, partial sets of drawings and individual sections of the specifications are not available.

.9 Bidders shall be responsible for the distribution of all Contract Documents and Addenda to all Subcontractors and suppliers.

.10 No claims for payment will be accepted because of failure on the part of the Owner, the Consultant or their representatives to supply any Subcontractor with all or part of the Contract Documents and Addenda thereto, which will have been supplied to the Bidder up to the closing date.

.11 The Contractor shall obey all Federal, Provincial and Municipal Laws, Acts, Ordinances, Regulations, Orders-in-Council and By-laws which could in any way pertain to the work outlined in the Contract or to the employees of the Contractor. Without limiting the generality of the foregoing, the Contractor shall satisfy all statutory requirements imposed by the Occupational

Health and Safety Act and Regulations made thereunder, on a supplier, a Constructor and/or Employer with respect to or arising out of the performance of a Contractor's obligations under this contract.

.12 The Contractor shall be aware of and conform to all governing regulations, including those established by the Owner, related to employee health and safety. The Contractor shall keep employees and sub-contractors informed of such regulations.

.13 The successful bidder shall at their own expense within 10 days of notification of acceptance and prior to the commencement of work, obtain and maintain until the termination of the contract or otherwise stated, provide **Peterborough Housing Corporation** with evidence of:

.1 Commercial General Liability Insurance issued on an occurrence basis for an amount of not less than $5,000,000 per occurrence / $5,000,000 annual aggregate for any negligent acts or omissions by the contractor relating to its obligations under this Agreement. Such insurance shall include, but is not limited to bodily injury and property damage including loss of use; personal injury; contractual liability; premises, property & operations; non-owned automobile; broad form property damage; broad form completed operations; owners & contractors protective; occurrence property damage; products; employees as Additional Insured(s); contingent employers liability; tenants legal liability; cross liability and severability of interest clause.

.1 Such insurance shall add the **Peterborough Housing Corporation and Barry Bryan Associates** as Additional Insured with respect to the operations of the contractor. This insurance shall be non-contributing with and apply as primary and not as excess of any insurance available to the Peterborough Housing Corporation and Barry Bryan Associates. The successful contractor shall indemnify and hold Peterborough Housing Corporation & Barry Bryan Associates harmless from and against any liability, loss, claims, demands, costs and expenses, including reasonable legal fees, occasioned wholly or in part by any negligence or acts or omissions whether willful or otherwise by the contractor, their agents, officers, employees or other persons for whom the contractor is legally responsible.

.2 Automobile Liability Insurance respect to owned or leased vehicles used directly or indirectly in the performance of the services covering liability for bodily injury, death and damage to property with a limit of not less than $2,000,000 inclusive for each and every loss.

.3 The Policies shown above shall not be cancelled unless the Insurer notifies **Peterborough Housing Corporation and Barry Bryan Associates** in writing at least thirty (30) days prior to the effective date of the cancellation. The insurance policy will be in a form and with a company which are, in all respects, acceptable to **Peterborough Housing Corporation**.

1.2 Tender Submissions

.1 The Tender Form, on the forms provided shall be filled in exactly as required.

.2 Bidders shall complete and return one (1) set of Tender Forms.

.3 Tenders must be submitted via Biddingo:

It is the sole responsibility of the Proponent to submit their Proposal via the online tendering portal, Biddingo

.5 Tender Forms shall be completed in a legible manner without alterations or erasures.

Incomplete tenders will not be considered.

.6 The onus unequivocally remains with the Bidder to ensure that tenders are submitted to **Barry Bryan Associates**, at the address shown above by the deadline for submission, in accordance with the submission instructions. Misdirected tenders received after the deadline for submission will not be accepted and will be returned unopened. Requests for adjustments to submitted tenders by telephone, fax or physically will not be considered.

.7 Tenders may not be submitted by physical delivery, facsimile, telephone or orally.

.8 Late tenders will not be accepted and will be returned unopened.

.9 Each Tender shall state the stipulated PRICE/PRICES for which the Bidder will undertake to carry out all the Work as described and/or shown in the Tender Documents.

.10 Bidders shall furnish all information requested and fill in all blanks in the Tender Form and should any uncertainty arise as to the proper manner of completing the form, the requisite information will be given by the Consultant.

.11 Bidders are required to include with their Tender submission, a copy of their most recent Workplace Safety and Insurance Board Firm Detail Profile Report (CAD-7), NEER or Cost & Frequency Record. This report will be a consideration in the evaluation and award of the tender.

.12 Incorporated Companies must attach Corporate Seal and Signatures of proper officers shall be affixed.

.13 All prices (unless otherwise specifically requested in the Tender Documents) shall be "Work completed" prices, and shall be understood to include all material, labour and other expenses including fees, insurance, compensation and other items required by governing regulations, as well as overhead and profit for the work concerned.

.14 It shall be understood that the Stipulated Price shall be open for acceptance and irrevocable for a period of **sixty (60) days**.

.15 Tenders received in accordance with these instructions will be opened by **Barry Bryan Associates** immediately following the deadline for the submissions.

1.3 Addenda

.1 Bidders may, during the tendering period, be advised by Addenda of required additions to, deletions from, clarifications to, or alterations in the requirements of the Tender Documents. All such changes shall become an integral part of the Tender Documents and shall be allowed for in the Stipulated Price.

.2 Insert, in the space provided in the Bid Form, the Addenda numbers of all Addenda received during bidding period. If no Addenda have been received, the word "NONE" shall be inserted in the space provided.

.3 Failure to acknowledge addenda shall result in a rejected tender.

1.4 Queries During Bidding Period

.1 All communication from Bidders in respect with this Tender will cease at 12:00 noon on **March 19, 2025.** Address queries regarding Bid Documents **via email** during bidding period to:

Barry Bryan Associates
250 Water Street Suite 201
Whitby, Ontario L1N 0G5
Telephone No.: (905) 666-5252
Facsimile No: (905) 666-5256
Email: csills@bba-archeng.com
Attention: Mr. Conrad Sills

1.5 Base Bid Tenders

.1 Materials and equipment are specifically described and named in this Specification to establish a standard of materials and workmanship to which the Bidders shall strictly adhere. Where manufacturer's trade names are used, the Stipulated Price shall be based on the use of such materials and equipment as specified, no substitutions will be allowed.

.2 Bidders may submit with their tender alternatives based on the use of alternative material equivalent to the materials or equipment specified in quality and performance and provided clearances and dimensions shown on the drawings are maintained. For all such alternative proposals the Bidder shall include the appropriate information in Appendix 'A' to the Tender form and supplementary information as follows:

.1 Item Specified.
.2 Proposed Substitution or Addition including manufacturer's name, supplier's name, and product identification.
.3 Change in price if any.
.4 A letter attached to Appendix 'A' including the reason for the proposed substitution and a detailed description of alternative including identification of differences from specified products along with a statement assuming full responsibility that any equipment shall not exceed the space requirements allocated on the drawings. The successful Bidder shall be responsible for any additional design architectural or engineering costs as may be incurred by the Consultant, and any installation cost resulting from the acceptance of a substitute piece of equipment or product.
.5 The Tenderer further agrees to submit product material specifications, samples, technical data, references or any other supporting documentation upon request, as may be necessary for the Owner and Consultant to evaluate any proposed Alternative.
.6 Under no circumstances shall the value of an alternative material or equipment be included in the Stipulated Price.
.7 Under no circumstances will alternatives submitted after the closing of Tenders be considered.
.8 The Owner reserves the right to accept or reject proposed alternatives as he sees fit, and also to claim for himself the financial benefit of a substitution, if a substitution is accepted. A rejection by the Owner of the proposed alternative is final and the Owner does not become obligated to give any reason for his action.

1.6 Tenders Not Necessarily Accepted

.1 The Owner reserves the right to:
.1 Cancel the Tender at any time prior to acceptance of a bid;

.2 Evaluate submissions based on past performance, timely project completion, appropriate manpower, equipment and facilities;
.3 Reject any or all bids;
.4 Accept the Tender in whole or in part;
.5 Reject any tender where satisfactory evidence of sufficient capital, capacity and experience to successfully prosecute and complete the work in the specified time, is not furnished by the bidder;
.6 Not consider a bidder who has been terminated by the Owner or has been deemed by the Owner to have provided unsatisfactory performance on any previous or current contract, or based on previous dealings between the Owner and the bidder;
.7 Not consider a bidder who is currently involved in or responsible for litigation of any kind against the Owner; and
.8 Not accept the lowest or any tender.

.2 Tenders containing escalation clauses will not be considered.

.3 Without limiting the generality of the foregoing, any tender which is incomplete, illegible or obscure, or which contains alterations not called for, or irregularities of any kind, may be rejected.

.4 Should a dispute arise from the terms and conditions of this contract regarding meaning, intent or ambiguity, the decision of the Owner shall be final.

1.7 Taxes

.1 All prices quoted shall include applicable customs duty, freight, insurance and all other charges of every kind attributable to the work. Award of Contract shall be based on the lowest compliant bid EXCLUDING applicable taxes.

.2 Applicable taxes are to be shown separately.

1.8 Time of the Essence

.1 Bidders are cautioned that time is of the essence in this Contract and that the ability to complete the Work within the stipulated time period will be one of the factors considered in the award of the Contract.

.2 Upon commencing work on site, all work must continue until completion without delay or work stoppage unless instructed otherwise by the Owner.

.3 The Contractor shall perform the work on a Monday to Saturday basis between the hours of 7:00 am and 6.00 pm., and on weekends where approved by the owner. The Owner may require that work be restricted at certain times, and will provide a minimum of 3 days written notice of such times.

.4 The Contractor shall refrain from work on Statutory Holidays recognized by the Owner. Under special circumstances, approval may be given for work on Statutory Holidays, at the discretion of the Owner. The Contractor will submit written notification at least four (4) days in advance of the Statutory Holiday on which he desires to work, indicating the location and nature of the work to be performed. The Contractor must obtain written permission from the Owner authorizing work on a specific Statutory Holiday.

.5 Work shall be completed in accordance with the following schedule:
.1 **Commencement Date: April 14, 2025**

.2 Substantial Performance Date: June 6, 2025
.3 Total Performance Date: June 11, 2025

.6 The Contractor will be required to provide all labour, material and equipment and direct his subcontractors and suppliers to work the number of shifts and days that are necessary to meet the Owner's schedule.

.7 Bidders shall allow in their Stipulated Price for all premium time and other costs as necessary to meet the required completion date.

1.9 Execute Contract

.1 The Successful Bidder shall execute the Contract Documents within ten (10) calendar days of receipt of notification of Acceptance of Tender from the Owner.

.2 The Successful Bidder shall commence the Work at the site within three (3) calendar days of receipt of Notification to Commence Work, and complete all construction to the satisfaction of the Owner and the Consultant as indicated in Section 7 herein.

.3 Failure by the Successful Bidder to meet the above requirements will entitle the Owner to cancel the award of the Contract. The Owner may then award the Contract to one of the other bidders or to take such other action as he chooses.

1.10 Location

.1 The site is located at 526 McDonnel Street, Peterborough, Ontario.

1.11 Completion Security

.1 The successful Contractor shall provide a **Performance Bond, and a Labour and Materials Payment Bond, each in an amount equal to 50% of the total contract sum** as accepted, to guarantee his faithful performance of this Contract and his fulfilment of all obligations in respect of payment for labour and materials used on this work. Bonds shall be issued by a Guarantee Surety Company, licensed to issue such instruments in the Province of Ontario, having been properly executed and in other respects acceptable to the Owner.

.2 An “Agreement to Bond” from a surety acceptable to the Owner, ensuring that a Performance Bond and/or Labour and Materials Payment Bond can be supplied constitutes part of the Tender and must be completed, duly signed and executed, and returned with the Tender in the enclosed envelope. Failure to provide the required Agreement to Bond Form will result in rejection of the bid.

1.12 Workplace Safety and Insurance Board

.1 The Contractor will be required to submit to the Owner a statement from the Workplace Safety & Insurance Board, that all assessments the Contractor is liable to pay under the Act or successor legislation have been paid. Such statement or Certificate of Clearance shall be provided prior to the issuance of the Contractor's last payment and at any other time when requested to do so.

1.13 Procedures to be Used if the Tender Exceeds Owner’s Budget

.1 The procedures recommended in CCDC Document 23 will be used.

.2 In the event that all Bids received exceed the Owner's budget, the Owner will negotiate changes in the scope of the work with the bidder submitting the lowest acceptable Bid. When the negotiations result in a Contract Price acceptable to both parties, no re-bidding of the project is necessary and the Contract should be awarded at the negotiated price.

.3 If negotiations fail to produce a Contract Price acceptable to both parties, or if, in the first instance, the changes contemplated result in a value in excess of 15%, the Bid Documents may be amended and invitations to re-bid be restricted to the three (3) lowest acceptable Bids on the original Bid Call.

1.14 Cash Allowances

.1 Include in the Stipulated Price, the following cash allowances:

.1	Independent inspection and testing	$	5,000.00
.2	Contingency for unforeseen items	$	50,000.00
.3	TOTAL CASH ALLOWANCES	$	55,000.00

End of Section

Replacement of Roof and Mechanical Improvements to the Woollen Mill
526 McDonnel Street, Peterborough, ON

_____

Name of Firm

_____

Address

_____

Postal Code

_____

Telephone No. Fax Number

_____

Email Address

_____

Name of Person Signing for Firm

To: Peterborough Housing Corporation

Attention: Mr. Zack Heurkens, Assistant Manager- Special Projects

Re: Tender submission for Woollen Mill Roof Replacement 526 McDonnel Street, Peterborough, Ontario

1.1 We _____agree for the
(Company Name)

Stipulated Price stated below to supply all necessary labour, materials, plant, equipment and services as may be required for the execution and completion of all work in connection with the above referenced project for Peterborough Housing Corporation, in accordance with Instructions to Bidders, the General Conditions, Supplementary General Conditions, Specifications and Drawings, prepared for that purpose by Barry Bryan Associates, Whitby, Ontario and to the entire satisfaction of Peterborough Housing Corporation.

1.2 STIPULATED PRICE $_____

Dollars ($_____)

1.3 H.S.T. in the amount of $ _____ is not included in the Stipulated Price.

1.4 Our Stipulated Price includes Cash Allowances in the Total Amount of $55,000.00 (Fifty-five Thousand Dollars) as listed in the Instructions to Bidders.

1.5 We have received and included for Addenda No. to in the Stipulated Price.

1.6 In the event that work extra to that included in the Contract is required, and is authorized in writing by the Owner, the Contractor shall be allowed a mark-up for overhead and profit calculated as follows:

.1 ten percent (10%) on Work performed by the Contractor's own forces, and
.2 five percent (5%) on Work performed by Subcontractors.

1.7 We agree the Owner reserves the right to accept or reject prices bid for the work or for any portion of the work.

1.8 We agree to complete all work including necessary overtime work pursuant to this Contract in the period required to meet the scheduled completion dates.

1.9 Attached to this Tender is our most recent Workplace Safety and Insurance Board Firm Detail Profile Report (CAD-7), NEER or Cost & Frequency Record.

1.10 We have carefully examined all the Tender Documents, have visited the Site, and have a clear and comprehensive knowledge of the Work required under this Contract and of all the working conditions and schedule requirements.

1.11 We submit the names of subcontractors upon whose tender the stipulated price was based:

TRADE	FIRM	ADDRESS
Roof Install		
Mechanical Contractor		
Electrical Contractor		

Exterior Ladder		
Exterior Painting		
Roof Hatch		
Sealant		
Structural Steel		

1.12 We the undersigned agree that this Tender is valid and irrevocable and subject to acceptance by the Owner without notice to us for a period of Sixty (60) days from date of receipt of Tender, and that if notified of award of Contract, we will within ten (10) days of receipt of notification of Acceptance of Tender:

.1 Furnish to the Owner, in care of the Consultant, copies of insurance policies as required by the Conditions of the Contract.

.2 Furnish to the Owner a breakdown of the Stipulated Price in such form and detail as required by the Owner for progress payments, taxation and internal accounting purposes.

.3 Furnish to the Owner, a Performance Bond and a Labour and Material Payment Bond each in an amount equal to 50% of the Stipulated Price to ensure the full and proper completion of the Contract.

.4 Commence the work forthwith after the receipt of a letter of intent, contract or Purchase Order or when notified to do so by the Consultant and/or Owner and to execute the work continuously to completion. Time shall be the essence of the Contract and the work shall be completed in accordance with the schedule outlined in the Instructions to Bidders.

.5 Furnish to the Owner a Clearance Certificate of the Workplace Safety and Insurance Board.

.6 Submit within three (3) days of award of the contract a detailed construction schedule to the Owner for approval.

.7 Furnish to the Owner a copy of our Corporate Safety Policy.

1.13 Wherever the plural is used herein, the same shall be read and construed as if the singular had been used where the facts and context so requires and as if all necessary grammatical changes had been made.

1.14 Bid Security: Attached to this tender form is a bid bond or certified cheque payable to Peterborough Housing Corporation in the amount of 10% of the Total Stipulated Tender Price. I/We the undersigned agree that if I/We withdraw this tender or default in executing a contract or providing the required Performance Security in accordance with the terms of the bid documents, the Owner shall have sustained liquidated damages in the amount equal to the difference between the amount of this bid and the amount for which the Owner legally contracts with another party to perform the work, if the latter amount exceeds the former up to a maximum of 10% of the Total Stipulated Tender Price and such amount shall become the property of the Owner.

1.15 Appendix A – Tender Alternatives

Item No.	Item Specified	Proposed Substitution	Change in Price if any

1.16 Signature and Seal of Bidder:

By my signature hereunder, I hereby agree to supply all of the labour, material, equipment and services required to complete the work specified for the Roof Replacement and Mechanical Improvements to Woollen Mill located at 526 McDonnel Street, Peterborough, Ontario in accordance with all of the terms and conditions of this tender.

Dated this _____ day of _____

_____
Name of Company

_____ _____
Street Address Signature of Company Official
(I have the authority to bind the Company)

_____ _____
City or Town Name and Title

_____ _____
Postal Code Signature of Company Official
(I have the authority to bind the Company)

_____ _____
Telephone No. Name and Title
SEAL

_____
Facsimile No.

_____
E-mail Address

_____
H.S.T. Registration No

If the bidding firm is a limited company, the company seal must appear on this Bid Form with the signature(s) of the proper signing official(s).

End of Section

PART 1 GENERAL

1.1 General

.1 The Agreement, Definition and General Conditions of this Contract shall be the Canadian Standard Construction Document CCDC-2, 2008, Stipulated Price Contract, except as amended by the Supplementary General Conditions, Section 00 54 00.

End of Section

1.1 The Standard Construction Document for Stipulated Price Contract, CCDC2-2008 English version, consisting of the Agreement Between Owner and Contractor, Definitions, and General Conditions of the Stipulated Price Contract, Parts 1 to 12 inclusive, governing same is hereby made part of these Contract Documents, with the following amendments, additions and modifications. Where these amendments, additions, and modifications specifically reference a change to the Agreement, Definitions, or General Conditions, these amendments, additions and modifications shall govern.

1.2 Article A-6 - RECEIPT AND ADDRESSES FOR NOTICES IN WRITING

.1 Delete Article A-6 and substitute new article 6.1:

6.1 Notices in Writing between the parties or between them and the Consultant shall be considered to have been received by the addressee on the date of receipt if delivered by hand or by commercial courier or if sent during normal business hours by fax and addressed as set out below. Such Notices in Writing will be deemed to be received by the addressee on the next business day if sent by fax after normal business hours or if sent by overnight commercial courier. Such Notices in Writing will be deemed to be received by the addressee on the fifth Working Day following the date of mailing, if sent by prepaid registered post, when addresses as set out below. An address for a party may be changed by Notice in Writing to the other party setting out the new address in accordance with this Article.

1.3 DEFINITIONS

.1 Add the following definitions:

16a. *Request for Information:*
Requests for Information (RFI's) are documents issued by the Contractor to the Consultant requesting clarification or to obtain additional information where the intent of the Contract Documents is unclear or information is missing.

19a. *Submittals*:
Submittals are documents or items required by the Contract Documents to be provided by the Contractor, such as:
- Shop Drawings, samples, models, mock-ups to indicate details or characteristics, before the portion of the Work that they represent can be incorporated into the Work; and
- As-built drawings and manuals to provide instructions to the operation and maintenance of the Work.

1.4 GENERAL

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

1.5 GC 1.1 CONTRACT DOCUMENTS

.1 Add to the end of subparagraph 1.1.2.2:

"except where the Consultant shall be indemnified as a third party beneficiary as provided in subparagraphs 9.2.7.4, 9.5.3.4 and in 12.1.3."

.2 Add new subparagraph 1.1.7.5:

1.1.7.5 In case of discrepancies, noted materials and annotations shall take precedence

over graphic representations in the Contract Documents.

.3 Delete from paragraph 1.1.8 the words "sufficient copies of the Contract Documents to perform the work" and replace with: "six (6) sets of the drawings and specifications upon which the Contract is based exclusive of those required by jurisdictional authorities and the executed Contract Documents. Additional copies of Contract Documents will be furnished to the Contractor at the Contractor's expense."

1.6 GC 2.2 ROLE OF THE CONSULTANT

.1 Add at the end of paragraph 2.2.9. “The Owner and the Contractor shall waive any claims against the Consultant arising out of the making of such interpretations and findings made in accordance with paragraphs 2.2.7., 2.2.8. and 2.2.9”.

.2 Delete the comma after the word “submittals” and add the words “which are provided” before the words “in accordance” in paragraph 2.2.14.

1.7 GC 2.4 DEFECTIVE WORK

.1 Add new subparagraphs 2.4.1.1 and 2.4.1.2:

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

2.4.1.2 The Contractor shall prioritize the correction of any defective work which, in the sole discretion of the Owner, adversely affects the day to day operation of the Owner.

1.8 GC 3.1 CONTROL OF THE WORK

.1 Add new paragraph 3.1.3:

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

1.9 GC 3.4 DOCUMENT REVIEW

.1 Delete paragraph 3.4.1 in its entirety and substitute new paragraph 3.4.1:

3.4.1 The Contractor shall review the Contract Documents and shall report promptly to the Consultant any error, inconsistency or omission the Contractor may discover. Such review by the Contractor shall comply with the standard of care described in paragraph 3.14.1 of the Contract. Except for its obligation to make such review and report the result, the Contractor does not assume any responsibility to the Owner or to the Consultant for the accuracy of the Contract Documents. The Contractor shall not be liable for damage or costs resulting from such errors, inconsistencies, or omissions in the Contract Documents, which the Contractor could not reasonably have discovered. 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 Contractor has received corrected or missing information from the Consultant.

.2 Add new paragraph 3.4.2:

3.4.2 The Contractor shall request clarification of information where the intent of the Contract Documents is unclear or information is missing through the use of Requests for Information.

.3 Add new paragraph 3.4.3:

3.4.3 Requests for Information shall be issued using a form acceptable to the Consultant. Each Request for Information shall deal with a single topic.

.4 Add new paragraph 3.4.4:

3.4.4 Requests for Information shall include at least the information noted in the specifications as being required.

.5 Add new paragraph 3.4.5:

3.4.5 The Contractor shall issue Requests for Information to the Consultant in a timely manner and sufficiently in advance so as to cause no delay in the Work or in the work of other contractors.

.6 Add new paragraph 3.4.6:

3.4.6 The Contractor shall review all Requests for Information before issuing them to the Consultant. The Contractor shall confirm that the Contractor has reviewed the Contract Documents and determined that the information being requested is not in the Contract Documents.

.7 Add new paragraph 3.4.7:

3.4.6 The Consultant shall review and respond to Requests for Information with reasonable promptness so as to cause no delay in the Work or in the work of other contractors.

1.10 GC 3.8 LABOUR AND PRODUCTS

.1 Add new paragraphs 3.8.4, 3.8.5 and 3.8.6:

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

3.8.5 Manufactured materials and equipment which are specified by their proprietary names or by part of catalogue numbers shall be provided. Where a number of proprietary materials are specified for one use the Contractor may select any of the materials specified. No substitute for the materials specified will be allowed unless written approval of alternate material equipment is authorized by the Consultant prior to signing of the Contract.

3.8.6 The Contractor shall use and/or install all proprietary materials and equipment in strict accordance with the manufacturer's printed instructions.

1.11 GC 3.10 SHOP DRAWINGS

.1 Add the words “AND OTHER SUBMITTALS” to the Title after SHOP DRAWINGS.

.2 Add “and Submittals” after the words “Shop Drawings” in paragraphs 3.10.1, 3.10.2, 3.10.4, 3.10.7, 3.10.8, 3.10.8.2, 3.10.9, 3.10.10, 3.10.11, and 3.10.12.

.3 Delete 3.10.3 in its entirety and substitute new paragraph 3.10.3

3.10.3 Prior to the first application for payment, the Contractor and the Consultant shall jointly prepare a schedule of the dates for submission and return of Shop Drawings and any Submittals.

.4 Delete the words “with reasonable promptness so as to cause no delay in the performance of the Work” and replace with “within 10 working days or such longer period as may be reasonably required” in paragraph 3.10.12.

.5 Add new paragraph 3.10.13:

3.10.13 Samples: Reviewed Samples will be returned to the Contractor and shall be maintained at the Place of the Work. Products installed into the Work must match reviewed Samples. Any products, whether incorporated in the Work or not, which do not match reviewed Samples, shall be removed and replaced at the Contractor's expense.

1.12 GC 3.11 USE OF THE WORK

.1 Add new paragraph 3.11.3:

3.11.3 The Owner shall have the right to enter and occupy the Work in whole, or in part, for the purpose of placing fittings and equipment or for other uses before completion of the Contract. Such entry and occupation shall not be considered as acceptance of the Work or in any way relieve the Contractor from his responsibility to complete the Contract.

1.13 GC 3.14 PERFORMANCE BY CONTRACTOR

.1 Add new paragraph 3.14.1:

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

.2 Add new paragraph 3.14.2:

3.14.2 The Contractor further represents, covenants and warrants to the Owner that:
- .1 The personnel it assigns to the Project are appropriately experienced;
- .2 It has a sufficient staff of qualified and competent personnel to replace its designated supervisor and project manager, subject to the Owner’s approval, in the event of death, incapacity, removal or resignation.

1.14 GC 4.1 CASH ALLOWANCES

.1 Delete paragraph 4.1.4 in its entirety and substitute new paragraph 4.1.4:

4.1.4 Where costs under a cash allowance exceed the amount of the allowance, unexpended amounts from other cash allowances shall be reallocated at the Consultant's direction to cover the shortfall.

.2 Delete paragraph 4.1.5 in its entirety and substitute new paragraph 4.1.5:

4.1.5. The net amount of any unexpended cash allowances, after providing for any re-allocations as contemplated in paragraph 4.1.4, shall be deducted from the Contract Price by Change Order.

.3 Delete paragraph 4.1.7 in its entirety and substitute new paragraph 4.1.7.

4.1.7 At the commencement of the Work, the Contractor shall prepare for the review and acceptance of the Owner and the Consultant, a schedule indicating the times, within the construction schedule referred to in GC 3.5, that items called for under cash allowances and items that are specified to be Owner purchased and Contractor installed or hooked up are required at the site to avoid delaying the progress of the Work.

.4 Add new paragraph 4.1.8:

4.1.8 The Owner reserves the right to call, or to have the Contractor call, for competitive bids for portions of the Work, to be paid for from cash allowances. When directed by the Owner or Consultant, the Contractor shall sign the assigned bidders as normal Subcontractors and assume full responsibility for supervision, scheduling, guarantees and payment for this portions of the Work so assigned.

.5 Add new paragraph 4.1.9

4.1.9 Where the actual cost under any cash allowance exceeds the amount of the allowance and unexpended amounts from other cash allowances, the Contractor shall be compensated only for the excess incurred and substantiated. There shall be no adjustment to the Contractor's fee or other expenses such as overhead or profit, it being understood and agreed that the Contract Price includes the Contractor's expenses and profit for all cash allowances whether or not they are exceeded.

1.15 GC 5.1 FINANCING INFORMATION REQUIRED OF THE OWNER

.1 Delete General Condition GC 5.1 entirely.

1.16 GC 5.2 APPLICATIONS FOR PROGRESS PAYMENT

.1 Delete paragraph 5.2.7 and substitute the following

5.2.7 No application may be made for payment for Products delivered to the Place of the Work but not yet incorporated into the Work.

.2 Add new paragraph 5.2.8:

5.2.8 With the second and all subsequent applications for payment, the Contractor shall submit a sworn statement that all accounts for products, labour, construction equipment, and other indebtedness which may have been incurred by the Contractor for work done and Products

supplied under the Contract 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 under the lien legislation applicable to the Place of Work or as an identified amount in a dispute.

.3 Add new paragraph 5.2.9:

5.2.9 The Contractor agrees that the Owner shall be under no obligation to have recourse to the right afforded to it under subsection 24(2) of the Construction Act, R.S.O. 1990, c. C.30, as amended, and that the Owner is under absolutely no obligation to make any payment to the Contractor in the face of either a registered lien or a notice of lien until same is discharged.

1.17 GC 5.3 PROGRESS PAYMENT

.1 Delete the words “before 20 calendar days" and replace with “before 30 calendar days” in paragraph 5.3.1.3

.2 Add new paragraph 5.3.2:

5.3.2 The Consultant shall deduct, on each certificate of payment, after the lien holdback has been deducted in accordance with the lien legislation applicable to the Place of Work, a further 5%, which will be set aside and held as a Contract Completion Security Account. The accumulated amount in this account shall be released to the Contractor one year following Substantial Performance of the Work. Partial releases of the Contract Completion Security Account will not be made. If, within fifteen (15) days of written notification by Owner at any time after Substantial Performance of the Work, the Contractor does not reach Total Performance of the Work, by failing to completely finish outstanding work, the Owner shall have the right to complete such work and deduct the cost for such work together with an appropriate administration fee from the Contract Completion Security Account.

1.18 GC 5.5 PAYMENT OF HOLDBACK UPON SUBSTANTIAL PERFORMANCE OF THE WORK

.1 Delete paragraph 5.5.3 entirely.

1.19 GC 5.6 PROGRESSIVE RELEASE OF HOLDBACK

.1 Delete paragraph 5.6.1 and replace with the following:

5.6.1 Holdback monies will not be released until 46 days after Substantial Performance of the Work.

1.20 GC 5.7 FINAL PAYMENT

.1 Delete the words “than 5 calendar days" and replace with “than 30 calendar days"” in paragraph 5.7.4.

1.21 GC 5.8 WITHOLDING OF PAYMENT

.1 Add new paragraph 5.8.2:

5.8.2 The Consultant may determine that certain RFIs issued by the Contractor are unnecessary and shall, in responding to such unnecessary RFIs, give the reasons for the determination in each case;

.1 if the Contractor continues to issue unnecessary RFIs, the Consultant, after having identified a minimum of five RFIs as unnecessary, will invoice the Owner for the

additional administrative cost of responding to each of the subsequent unnecessary RFIs;

.2 the Consultant will notify the Contractor and Owner each time such an additional administrative cost is charged;

.3 the Owner shall reimburse the Consultant for the monthly total of such additional administrative costs; and

.4 the monthly total of such additional administrative costs shall be charged to the Contractor by showing the monthly total as a credit on each subsequent Certificate for Payment. This constitutes a change to the contract price and must be handled as a Change Order.

1.22 GC 6.1 CHANGES IN THE WORK

.1 Add new paragraphs 6.1.3, 6.1.4, 6.1.5, 6.1.6, 6.1.7, 6.1.8, 6.1.9, 6.1.10 and 6.1.11:

6.1.3 Where a change in the Work involves additions, deletions, or other revisions to the Work, the Contract Price shall be increased only by the net actual value of the change in the Work, including taxes, but excluding Value Added Taxes, plus the allowance for overhead and profit as permitted and agreed by the Owner.

.2 If a Subcontractor retains another subcontractor (sub-subcontractor), no additional mark-up shall be charged to the Owner for the sub-subcontract work.

.3 Overhead and profit may not be charged on changes in the Work where there is a net decrease to the Contract Price.

6.1.4 Costs for the following items shall be considered to be included in the Contractor's allowance for overhead:

.1 Contractor's site and head office expenses.

.2 Wages of project managers, superintendents, assistants, watch persons and administrative personnel.

.3 Temporary site office, including costs for telephone and facsimile machine.

.4 Small tools (valued less than $2,000).

.5 Insurance and bonding premiums.

.6 Record drawings.

.7 Clean-up and disposal of waste materials.

6.1.5 Labour costs shall be the actual, prevailing rates at the Place of the Work paid to the workers, plus statutory charges on labour including statutory workers' insurance, employment insurance, Canada Pension, vacation pay, medical and health benefits.

6.1.6 Quotations for changes in the Work shall be accompanied by itemized breakdowns together with detailed, substantiating quotations or cost vouchers from Subcontractors and Suppliers, submitted in a format acceptable to the Consultant.

6.1.7 The Contractor is obliged to review and consider the value and validity of Subcontractors and Suppliers quotations to be used as backup for proposed Change Order pricing before submission to the Consultant. The Contractor shall ensure that only valid, and fair and reasonable costs are submitted to the Consultant. The Consultant will not directly negotiate with Subcontractors and Suppliers on behalf of the Contractor. The Contractor shall maintain financial oversight of the Subcontractors and Suppliers and filter out unreasonable claims.

6.1.8 Unit and alternative prices included in the Contract include supply, installation, Products, Construction Equipment, services, materials, labour, overhead and profit, but exclude Value Added Taxes and Provincial Sales Tax.

6.1.9 The Owner, through the Consultant, reserves the right to authorize payment for changes

in the Work by means of cash allowance disbursement authorizations.

6.1.10 When additions, deletions, or other revisions to the Work covering related work or substitutions are involved in a change to the Work, payment, including overhead and profit, shall be calculated on the basis of the net difference to the Contract Price, if any, with respect to the change in the Work.

6.1.11 If any change or deviation in, or omission from the Work is made by which the amount of Work to be performed is decreased, or if the whole or a portion of the Work is dispensed with, no compensation is claimable by the Contractor for any loss of anticipated profit in respect thereof.

1.23 GC 6.2 CHANGE ORDER

.1 Change paragraph 6.2.2 to read:

6.2.2 The Contractor shall present in a form acceptable to the Consultant an amount of adjustment for the Contract Price, if any, and an adjustment in the Contract Time, if any, for the changes covered by a Change Directive. The procedures of evaluation including applicable overhead and profit mark-up provisions shall be as described under GC 6.3 CHANGE DIRECTIVE.

.2 Add new paragraph 6.2.3:

6.2.3 The procedures of evaluation including applicable overhead and profit mark-up provisions for Change Orders shall be as described under GC 6.1 CHANGES IN THE WORK.

.3 Add new paragraph 6.2.4:

6,2,4: When submitting a price in response to a Proposed Change Order related to time and materials or costs in respect of a Change Directive, the Contractor shall be allowed a mark-up for overhead and profit calculated as follows:
(1) ten percent (10%) on Work performed by the Contractor's own forces, and
(2) five percent (5%) on Work performed by Subcontractors.

1.24 GC 6.3 CHANGE DIRECTIVE

.1 Delete paragraph 6.3.2 and replace with the following:

6.3.2 Upon receipt of a Change Directive, the Contractor shall proceed promptly with the change in the Work. The adjustment in the Contract Price for a change carried out by way of a Change Directive shall be determined in one of the following methods:

.1 Estimate and acceptance in a lump sum;
.2 Unit prices set out in the Contract or subsequently agreed upon;
.3 Actual cost of expenditures and savings to perform the work attributable to the change plus a fixed or percentage mark-up.

.2 Delete paragraph 6.3.3 and replace with the following:

6.3.3 In the case of a change in the Work to be valued in accordance with method (.1) of paragraph 6.3.2, the Contractor shall present to the Consultant for approval a detailed estimate of the costs of the Contractor and the involved Subcontractors including products, labour itemized by man hours, labour burden and the overhead and profit of each of the involved Subcontractors shown separately.

.1 In the case of a change to be valued under methods prescribed in Paragraphs 6.3.2.2 and 6.3.2.3, the form of the presentation of costs and methods of measurement shall be agreed to by the Owner, through the Consultant, and the Contractor before proceeding with the change.

.3 Change paragraph 6.3.4 to read:

6.3.4 When method prescribed in Paragraph 6.3.2.3 is used to determine the value of a change in the Work, the Contractor shall keep and present, in such form as the Consultant may require, an itemized accounting of the actual cost of expenditures and savings together with supporting data. The cost of performing the work attributable to the Change Directive shall be limited to the actual cost of the items contained in Paragraphs 6.3.4.1 to 6.3.4.17.

.4 Delete paragraph 6.3.6 entirely and replace with the following:

6.3.6 The procedures of evaluation including applicable overhead and profit mark-up provisions for Change Directives shall be as described under GC 6.1 CHANGES IN THE WORK.

1.25 GC 6.4 CONCEALED OR UNKNOWN CONDITIONS

.1 Add new paragraph 6.4.5:
6.4.5 The Contractor confirms that, prior to bidding the Project, it has carefully investigated the Place of the Work and applied to that investigation the degree of care and skill described in paragraph 3.14.1, given the amount of time provided between the issue of the bid documents and the actual closing of bids, the degree of access provided to the Contractor prior to submission of bid, and the sufficiency and completeness of the information provided by the Owner. The Contractor is not entitled to compensation or to an extension of the Contract Time for conditions which could reasonably have been ascertained by the Contractor by such careful investigation undertaken prior to the submission of the bid.

1.26 GC 6.5 DELAYS

.1 Delete the period at the end of paragraph 6.5.1, and substitute the following words:

", but excluding any consequential, indirect or special damages."

1.27 GC 6.6 CLAIMS FOR A CHANGE IN CONTRACT PRICE

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

1.28 GC 8.2 NEGOTIATION, MEDIATION AND ARBITRATION

.1 Add the following new paragraphs 8.2.9, 8.2.10, 8.2.11, 8.2.12, 8.2.13, and 8.2.14.

8.2.9 Within five days of receipt of the notice of arbitration by the responding party under paragraph 8.2.6, the Owner and the Contractor shall give the Consultant a written notice containing:

a) a copy of the notice of arbitration b) a copy of supplementary conditions 8.2.9 to 8.2.14 of this Contract, and; c) any claims or issues which the Contractor or the Owner, as the case may be, wishes to raise in relation to the Consultant arising out of the issues in dispute in the arbitration

8.2.10 The Owner and the Contractor agree that the Consultant may elect, within ten days of receipt of the notice under paragraph 8.2.9, to become a full party to the arbitration under paragraph 8.2.6 if the Consultant:

a) has a vested or contingent financial interest in the outcome of the arbitration;

b) gives the notice of election to the Owner and the Contractor before the arbitrator is appointed;

c) agrees to be a party to the arbitration within the meaning of the rules referred to in paragraph 8.2.6, and,

d) agrees to be bound by the arbitral award made in the arbitration.

8.2.11 If an election is made under paragraph 8.2.10, the Consultant may participate in the appointment of the arbitrator and, notwithstanding the rules referred to in paragraph 8.2.6, the time period for reaching agreement on the appointment of the arbitrator shall begin to run from the date the respondent receives a copy of the notice of arbitration.

8.2.12 The arbitrator in the arbitration in which the Consultant has elected under paragraph 8.2.10 to become a full party may:

a) on application of the Owner or the Contractor, determine whether the Consultant has satisfied the requirements of paragraph 8.2.10, and;

b) make any procedural order considered necessary to facilitate the addition of the Consultant as a party to the arbitration.

8.2.13 The provisions of paragraph 8.2.9 shall apply mutatis mutandis to written notice to be given by the Consultant to any sub-consultant;

8.2.14 In the event of notice of arbitration given by the Consultant to a sub-consultant, the sub-consultant is not entitled to any election with respect to the proceeding as outlined in 8.2.10, and is deemed to be bound by the arbitration proceeding.

1.29 GC 9.1 PROTECTION OF WORK AND PROPERTY

.1 Delete subparagraph 9.1.1.1 in its entirety and substitute new subparagraph 9.1.1.1:

9.1.1.1 errors in the Contract Documents which the Contractor could not have discovered applying the standard of care described in paragraph 3.14.1;

.2 Delete paragraph 9.1.2 in its entirety and substitute the following new paragraph 9.1.2:

9.1.2 Before commencing any Work, the Contractor shall determine the locations of all underground utilities and structures indicated in the Contract Documents, or that are discoverable by applying to an inspection of the Place of the Work the degree of care and skill described in paragraph 3.14.1.

1.30 GC 9.2 TOXIC AND HAZARDOUS SUBSTANCES

.1 Add to paragraph 9.2.6 after the word "responsible", the following new words: or whether any toxic or hazardous substances or materials already at the Place of the Work (and which were then harmless or stored, contained or otherwise dealt with in accordance with legal and regulatory requirements) were dealt with by the Contractor or anyone for whom the Contractor is

responsible in a manner which does not comply with legal and regulatory requirements, or which threatens human health and safety or the environment, or material damage to the property of the Owner or others,

.2 Add “and the Consultant” after the word “Contractor” in subparagraph 9.2.7.4.

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

1.31 GC 9.5 MOLD

.1 Add “and the Consultant” after “Contractor” in subparagraph 9.5.3.4.

1.32 GC 10.1 TAXES & DUTIES

.1 Add the following to paragraph 10.1.2:

.1 The Contractor must provide a detailed breakdown of additional taxes if requested by the Owner in a form satisfactory to the Owner.

.2 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 and duties.

1.33 GC 10.2 LAWS, NOTICES, PERMITS, AND FEES

.1 Delete from the first line of paragraph 10.2.5 the word, “The” and substitute the words: “Subject to paragraph 3.14.1, the”.

1.34 GC 11.1 - INSURANCE

.1 Refer to paragraph 11.1.1(1): change “Two Million ($2,000,000.00) to read: “Five Million ($5,000,000.00).

1.35 GC 11.2 – CONTRACT SECURITY

.1 Add new paragraph 11.2.3:

11.2.3 The bonds shall cover payment of all obligations occurred in the event of the Contractor's default, including the following:

Payment of all legal, architectural, mechanical, electrical and structural engineering expenses incurred by the Owner in determining the extent of work executed and work still to be executed and any additional work required as a result of the interruption of the work.

Payment of additional expenses to the Owner in the form of Watchmen's services, light, heat, power, etc., payable over the period between the default of the original contract and commencement of the new contract.

1.36 GC 12.1 INDEMNIFICATION

.1 Add new clause 12.1.1.3.

12.1.1. 3. The Contractor shall indemnify and hold harmless the Consultant, its agents and employees from and against claims, demands, losses, costs, damages, actions, suits, or proceedings by third parties that arise out of, or are attributable to, the Contractor's performance of the Contract, provided such claims are attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property, and caused by negligent acts or omissions of the Contractor or anyone for whose acts the Contractor may be liable, and made in writing within a period of 6 years from the date of Substantial Performance of the Work as set out in the certificate of Substantial Performance of the Work, or within such shorter such period as may be prescribed by any limitation statute or the province or territory of the Place of Work.

1.37 GC 12.3 WARRANTY

.1 Delete from the first line of paragraph 12.3.2 the word, "The" and substitute the words: "Subject to paragraph 3.14.1, the…".

.2 Add the following to GC 12.3.3:

"The term "defect" shall not be construed as embracing such imperfections as would naturally follow misuse, failure to perform recommended maintenance, accident, or the wear and tear of normal use.

Generally, any manufactured item or material, which when used as directed, must be capable of such use for the duration of the specified warranty period. Failure to comply with this requirement shall be considered as being a "defect".

The costs of investigations, tests, repairs and/or replacement and the making good of any resulting damage shall be borne by the Contractor. The Contractor shall be responsible to see that all required work is performed without undue delay.

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. The Owner shall give notice of observed defects promptly. Additional charges for overtime work in this regard must be borne by the Contractor. Prior to the expiry of the Warranty Period the Owner reserves the right to carry out a detailed and exhaustive inspection of the building with regard to all work carried out under the terms of this contract and the Contractor shall be required to make good the defective or unsatisfactory materials and/or workmanship observed."

.3 Add new paragraphs 12.3.7, 12.3.8, 12.3.9 and 12.3.10:

12.3.7 If extended warranties in excess of one year are required elsewhere in the Contract Documents, the provision of this article shall also apply for such extended periods.

12.3.8 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.

12.3.9 The Contractor shall make good in a permanent manner, satisfactory to the Owner, any and all damage to the work both during construction and during the period of warranty as

aforesaid. The Contractor shall commence repairs on any work identified as defective within 48 hours or receipt of notice from the Owner or the Consultant.

12.3.10 The decision of the Owner and Consultant shall be final as to the necessity for repairs or for work to be done under this Section.

End of Supplementary General Conditions

PART 1 GENERAL

1.1 General Requirements

.1 Unless specified otherwise, the provisions all Sections of Division 01 shall apply to all Sections of the specifications.

.2 Conform to the General Conditions of the Canadian Standard Construction Document CCDC 2 2008 Stipulated Price Contract as amended by The Supplementary General Conditions.

.3 Study all Contract Documents to determine additional work required on which the work of other Sections depend.

.4 Workmanship shall be of highest quality in accordance with best standard practice for this type of work, except where specified more precisely.

.5 All materials shall be as specified.

1.2 Specification Format

.1 These specifications are not intended as a detailed description of installation methods but serve to indicate particular requirements in the completed work.

.2 Conform to The Building Code Act, and, O. Reg. 332/12 (or latest revision) together with all its related supplements, hereinafter referred to as the "code" or "Code". Where Drawings and Specifications exceed Code requirements provide such additional requirements.

.3 Where a material is designated on Drawings or in the Specifications for a certain application, unless otherwise specified, that material shall conform to standards designated in the Code. Similarly, unless otherwise specified, installation methods and standards of workmanship shall also conform to standards invoked by the aforementioned Code. Where no particular material is specified for a certain use, select from the choice offered in the Code in each case.

.4 Where the aforementioned Code or this specification does not provide all information necessary for complete installation of an item, then the manufacturer's instructions for first quality workmanship shall be strictly complied with.

1.3 Coordination

.1 Co-ordinate all sections of the work. The responsibility as to which subcontractor, or supplier provides labour, material, equipment or services rests solely with the Contractor. The Consultant will not be required to settle disputes between the Contractor and subcontractors or suppliers.

1.4 Standards and Definitions

.1 Where a reference is made to specification standards produced by various organizations, conform to latest edition of standards, as amended and revised to date of Contract.

.2 Have a copy of each specified standard which relates to your work available on the site to be produced immediately on Consultant’s request.

.3 Where a standard designates authorities such as the "Engineer", the "Owner" (when used in a sense other than that defined in the General Conditions) or some other such designation, these designations shall be taken to mean the Consultant.

1.5 Cooperation

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

1.6 Cash Allowances

.1 Comply with requirements specified herein and with applicable requirements of the General Conditions of the Contract.

.2 Unless otherwise specified, cash allowances shall cover the cost of the materials and equipment delivered F.O.B. job site, and all applicable taxes. The Contractor's handling costs on the site, labour, installation costs, overhead and profit and other expenses shall be included separately in the Contract Sum and not in the Cash Allowance.

.3 Where it is specified that a cash allowance is to include both supply and installation costs, such allowances shall cover the cost of the materials and equipment delivered and unloaded at the site, all applicable taxes, and the Contractor's handling costs on the site, labour and installation costs, and other expenses, except overhead and profit which shall be included separately in Contract Sum.

.4 Cash allowance for independent inspection and testing shall cover the cost of such services as provided by independent testing agency only. The Contractor's cost for labour, overhead and other expenses shall be included separately in the Contract Sum and not in the allowance.

.5 If the cost of the Work covered by allowances, when determined, is more or less than the allowance, the Contract Sum shall be adjusted accordingly by Change Order.

.6 The Contractor shall cause the work covered by allowances to be performed for such amounts and by such persons as the Consultant may select and direct.

.7 Expenditures from cash allowances shall be authorized in writing by the Consultant. Trade Discounts and refunds shall be credited to the Owner; only cash discounts (if any) on accounts paid by the Contractor before net due date being retained by the Contractor.

.8 Refer to Instructions to Bidders, for list of Cash Allowances.

1.7 Lines, Levels and Dimensions

.1 Lay out work in accordance with lines and levels shown on Drawings and existing conditions.

.2 Verify lines, levels and dimensions and report errors or inconsistencies in the Drawings to Consultant before commencing shop drawing or the work.

1.8 Schedules

.1 Immediately after award of the Contract submit a progress schedule for the work of the entire Contract. Schedules shall be prepared using Microsoft MS-Project.

.2 Include with the schedule a cash flow chart calendarized on a monthly basis in an approved manner. The cash flow chart shall indicate anticipated Contractor's monthly progress billings from commencement of the work to completion.

.3 Completely update the progress schedule and cash flow chart whenever changes occur to the scheduling and in a manner and at times satisfactory to the Consultant.

.4 Submit a shop drawing schedule showing critical dates for preparation, distribution and review of shop drawings, to the Consultant, prior to commencement of the work. Allow sufficient time for the review of shop drawings as indicated in the General Conditions.

1.9 Material Storage and Handling

.1 Store packaged materials in original, undamaged condition with manufacturers' labels and seals intact. Handle and store materials in accordance with manufacturer’s and supplier’s recommendations and in manner to prevent damage to materials during storage and handling. Replace damaged materials.

1.10 Access to Existing Premises

.1 Prior to entering any area of existing premises to carry out work or to obstruct or take out of use any area of existing premises, request a meeting with the Owner in order to reach agreement as to time and length of time of possession, obstruction or removal from use any such area.

.2 Be aware of all production restraints on the work of this contract. Hardship claims due to failure to do so will not be considered.

1.11 Examination

.1 Examine the work. Report to Consultant in writing defects in such work. The commencement of work or any part of it, shall be deemed acceptance of the work upon which work or that part of it which has been applied depends.

.2 Drawings are, in part, diagrammatic and are intended to convey scope of work and indicate general and approximate location, arrangement and sizes of fixtures and equipment. Obtain more accurate information about locations, arrangement and sizes from study and coordination of shop drawings and interference drawings, including architectural, structural, mechanical, plumbing, fire protection and electrical drawings and become familiar with conditions and spaces affecting these matters before proceeding with work. Where job conditions require reasonable changes in indicated locations and arrangements, make changes at no additional cost to Owner. Where existing conditions interfere with new installation and require relocation, include such relocation in the work of this Contract.

.3 Install and arrange fixtures and equipment in such a way as to conserve as much headroom and space as possible.

.4 All Mechanical and Electrical work shall be concealed, both interior and exterior, unless approved by the Consultant. Report any instances where drawings indicate exposed services and obtain instructions.

1.12 Protection

.1 Ensure that no damage is caused to existing structures, buildings, foundations, pavement, fences, curbs, grounds, plants, property, utilities, services, and finishes during the progress of Work. Repair and make good any damage caused at no extra cost to the Owner to the complete satisfaction of the respective property owners and authorities having jurisdiction. Do not proceed with repairs or remedial work without written permission of the Consultant.

.2 Adequately protect trowelled concrete sub-floors and finished flooring from damage. Take special measures when moving heavy loads or equipment on finish floor slabs or flooring.

.3 Keep floors free of oils, grease or other materials likely to discolour them or affect bond of applied surfaces.

.4 Damaged work shall be made good by appropriate trades.

.5 Protect existing Buildings, surfaces, equipment and work. Repair or replace any damage at no extra expense to the Owner, until final acceptance

1.13 Concealment

.1 Pipes, ducts, tubing and wiring shall be concealed in the floor, wall and ceiling construction of finished areas wherever possible except where specified more precisely. If any doubt arises as to the means of concealment, the Contractor shall request clarification from the Consultant before proceeding with the portion of the work in question.

.2 Do not install conduit, piping or other services exposed on face of exterior walls or surfaces without the express consent of the Consultant. Where drawings indicate such installation, review requirements with the Consultant prior to proceeding with the work.

.3 All horizontal conduit and piping at grade shall be buried.

.4 Mechanical and Electrical work shall be inspected and tested before being concealed.

1.14 Fastenings

.1 Supply all fastenings, anchors and accessories and adhesives required for fabrication and erection of the work.

.2 Metal fastenings shall be of the same material as the metal component they are anchoring or of a metal which will not result in an electrolytic action which would cause damage to the fastening or metal component under moist or acidic conditions. Exposed metal fastenings and accessories shall be of same texture, colour and finish as base metal on which they occur.

.3 Anchoring and fastening devices or adhesive shall be of appropriate type and shall be used in sufficient quantity in such a manner as to provide positive permanent anchorage of the unit to be anchored in position. Install anchors at spacing to provide for required load carrying capacity.

.4 Keep exposed fastenings to a minimum, evenly spaced and neatly laid out.

.5 Supply adequate instructions and templates and, if necessary, supervise installation where fastenings or accessories are required to be built into work of other trades.

.6 Fastenings which cause spalling or cracking of material to which anchorage is being made are not permitted.

.7 Powder actuated fastening devices will not be permitted on this project.

1.15 Cutting and Patching

.1 Cut, patch and make good to leave work in a finished condition where new work connects with existing and where existing work is altered.

.2 Do cutting and patching in the following manner:
- .1 Regardless of which Subcontractor or Section of the specifications is responsible for any portion of cutting and patching work, in each case tradesmen qualified in the work being cut and patched shall be employed to ensure that it is correctly done.
- .2 Do not cut, drill or sleeve load-bearing members without first obtaining Consultant's written authority for each condition.
- .3 Drill work carefully, leaving clean hole not larger than required. This applies to both new and existing work.
- .4 Cut holes after they are located by trades requiring them.
- .5 Make cuts with clean, true, smooth edges. Fit units to tolerances established by existing work and in conformance with best standard practice for applicable class of work. Make patches invisible in finished work.
- .6 Wherever it becomes necessary to cut or interfere in any manner with existing services and apparatus, do so at such times as approved by the Consultant. Give minimum advance notice of one week of such requirements.
- .7 Co-ordinate work of your Section with work of other Sections, taking into account existing installations to assure best arrangement of components in available space. For critical locations review with Consultant before commencing work.

1.16 Cold Weather Working

.1 Particular attention is drawn to the requirement that the Contractor shall commence work immediately upon Contract award and shall continue full scale operations until the work is completed and accepted by the Consultant.

.2 The Stipulated Price includes all costs for the provision of temporary heating, temporary shelters and all other necessary cold weather measures to enable all trades including any assigned sub-trades to proceed without delay regardless of weather, to complete the entire building.

1.17 Overloading

.1 Load no part of structure during construction with loads greater than calculated to be supported safely when completed. Make every temporary support as strong as permanent support. Place no load on concrete slabs until they have achieved sufficient strength to safely carry such load.

1.18 Existing Services

.1 Carry out the breaking into or connecting to existing services at such hours and times as recommended by the governing authorities and approved by the Consultant, and with a minimum of disturbance to Owner's operations.

1.19 Temporary Facilities

.1 Provide, install, maintain and locate where directed the following temporary facilities for the work and for all trades except where specified otherwise and remove them upon completion of the work:
  .1 Existing Services:
    .1 Connect to existing water, electricity and compressed air to the approval and satisfaction of the Owner. Pay all costs associated with such connections.
    .2 Cost of water, electricity will be paid by the Owner. Take due precautions to ensure unwarranted or excess use does not occur.
  .2 Heat, Heating Equipment and Shelter
    .1 Keep that work which requires protection from cold adequately warm and sheltered from elements so that it may be done safely and with good workmanship meeting all code requirements. Provide minimum required temperatures and do everything necessary to produce a suitable environment for work to proceed without delay at all times of the year.
  .3 Weather Protection
    .1 Provide adequate weather protection around and over all openings during the progress of the work to prevent damage to the existing building and completed work. Insulate openings or provide temporary heat to maintain comfort conditions in the area during construction.
  .4 Dust Screens/Hoarding
    .1 Maintain adequate dust screens and hoarding around demolition areas to protect buildings, equipment and staff. Schedule excessively noisy and dusty operations as approved by the Owner.
  .5 Falsework
    .1 Design and construct falsework in accordance with CSA S269.1, and Ministry of Labour Regulations.
  .6 Hoisting Equipment
    .1 Hoisting equipment shall be provided and operated by a fully qualified hoist operator, all trades making their own financial arrangements with Contractor for use thereof.
  .7 Toilets
    .1 Provide adequate washroom facilities for all construction personnel, and in accordance with the Ministry of Labour Regulations. Use of the Owner's facilities is strictly prohibited.
  .8 Field Offices and Storage Sheds
    .1 Space and locations for field offices, storage sheds and lunchrooms for the contractors own use shall be assigned by the Owner.
    .2 Provide a room 6.0 x 3.6 m minimum for the conducting of regular project meetings with the Owner and Consultant. The room shall be suitably heated and air conditioned to maintain a temperature of 22° C, lighted and furnished to the satisfaction of the Consultant, and shall be equipped with a telephone and facsimile machine.
  .9 Temporary Light and Power
    .1 The Contractor may use the Owner's power.
    .2 The Contractor will be responsible for the supply, installation, maintenance and removal of the following:
      .1 Temporary sub-feeds.
      .2 Distribution transformers.

.3 Distribution panel boards.
.4 Branch wiring.
.5 Grounding.
.6 Lighting Fixtures.
.7 Power Centres/Outlets.
.3 All equipment used shall be CSA approved.
.4 Provide all temporary lighting as necessary.
.10 Barricades, Safety Fencing and Traffic Control
.1 Provide all necessary barricades, fencing, hoarding and railings to protect the work areas and prevent access by unauthorized personnel from entering the site. Provide all necessary safety screens and hoarding to protect pedestrians and vehicles passing through the work area when necessary.
.2 Provide all required flagmen and watchmen to safely direct traffic around the work areas.

1.20 Scaffolding

.1 Design and construct scaffolding in accordance with CSA S269.2-M.

.2 Erect scaffolding independent of walls. Use it in such a manner as to interfere as little as possible with other trades. When not in use, move it as necessary to permit installation of other work. Construct and maintain scaffolding in a rigid, secure and safe manner. Remove it promptly when no longer required. Scaffolding must comply with all safety regulations in force in the Province of Ontario, including the Owner’s Health and Safety Departments.

.3 Scaffolds must be in good condition and if equipped with wheels, the wheels must be locked when in use.

.4 Planking on scaffold must meet the requirements of the Occupational Health and Safety Act, 1991 and Regulations for Construction Projects.

1.21 Closing off Areas

.1 Close off access routes by placing barricades or to prevent unauthorized personnel from having access to areas of the work. Unauthorized personnel shall mean the Owner's employees and anyone not directly concerned with the execution, supervision or inspection of the work. Obtain prior written approval from the Owner at least l0 working days in advance of any required closings

1.22 Access to Site

.1 Co-operate and co-ordinate with the Owner at all times.

.2 Height, width and weight restrictions must be verified by the Contractor prior to bringing equipment into the work area.

1.23 Fire Protection

.1 Provide temporary fire protection throughout the course of construction. Particular attention shall be paid to the elimination of fire hazards.

.2 Comply with the requirements of FCC No. 301 Standards for Construction Operations issued by the Fire Commissioner of Canada and the National Building Code.

.3 Prior to demolition or construction, submit to the Consultant for review, a “Fire Safety Plan” conforming to Section 2.14 of the National Fire Code of Canada. Maintain a copy of the “Fire Safety Plan” on site.

.4 Provide and maintain portable fire extinguishers during demolition and construction, in accordance with Part 6 of the National Fire Code of Canada.

.5 Maintain unobstructed access for firefighting at all areas in accordance with the National Building Code of Canada.

1.24 Verification

.1 Carefully check the drawings and specifications and draw to the attention of the Consultant any apparent discrepancies or dimensional errors before proceeding with the work. Any job deviation from the specifications and drawings shall be drawn to the attention of the Consultant for decision before proceeding with the work. Check and verify all dimensions at the job wherever referring to the work. All dimensions when pertaining to the work of other trades shall be verified with the Contractor concerned prior to start of the work.

1.25 Progress Reports and Meeting Minutes

.1 Keep a permanent written record on the site of the progress of the work. This record shall be open to the inspection of the Consultant at all reasonable times and a copy shall be furnished to the Consultant upon request.

.2 The record shall show the dates of commencement and completion of the different trades and parts of the work coming under the Contract and shall include particulars regarding daily weather conditions, demolition work, erection work, etc., and number of employees of the various trades engaged on the work.

.3 After the award of the Contract and in consultation with the Consultant, arrange regular weekly (or as otherwise required by the Owner) project meetings. The Contractor and the Owner shall be represented at these meetings, as well as any sub-contractor or supplier as may be invited to specific meetings. Minutes of such meetings shall be recorded by the Consultant, who shall forward a copy to all parties in attendance within three (3) days of the meeting.

.4 Prior to the regular project meetings with the Owner and Consultant the Contractor shall hold meetings with his workers and/or his sub-contractors and/or suppliers. Minutes of such meetings shall be submitted to the Consultant and Owner.

.5 During the course of the work on the site, hold safety meetings at least weekly with sub-trades and the Owner's Safety representatives. Minute such meetings and submit same to the Consultant and all present. This does not relieve the Contractor of his responsibility to inform the Consultant and the Owner immediately of any accident or unsafe conditions.

1.26 Ownership of Materials

.1 All work or material delivered on the site or premises to form part of the works, shall be considered the property of the Contractor until installed and shall not be removed without the consent of the Owner, but the Contractor shall have the right to and shall remove the surplus material after he has completed the work. If so directed by the Consultant, such surplus material shall be removed at any time prior to the completion of the work.

.2 Note that all demolition materials, concrete, steel, etc., shall be removed from the Owner's property, and disposed of at a location arranged for by the Contractor, and at the Contractor's expense, unless specifically noted otherwise.

.3 All material and equipment indicated on the Drawings to be removed and handed to the Owner shall be carefully removed and delivered to an area on the property as directed by the Consultant. Any damage to the removed materials that are to remain the property of the Owner shall be repaired at the Contractor's expense to the complete satisfaction of the Consultant.

1.27 Utilities

.1 Be responsible for the protection of all utilities where required. However, no claims will be considered which are based on delays or inconvenience resulting from relocation due to the Contractor failing to provide adequate protection.

.2 The location and depth of any underground utilities shown on the Contract Drawings are based on the investigations made by the Owner. It is, however, the Contractor's responsibility to contact the Owner for further information in regard to the exact location of all utilities to exercise the necessary care in construction operations and to take such other precautions as are necessary to safeguard the utilities from damage.

.3 Give proper notices for new services as may be required. Make arrangements with authorities and utilities for service connections required.

.4 Pay any charges levied by utilities or authorities for work carried out by them in connection with this Contract, unless specified otherwise.

.5 Operate and maintain all utility systems affected by work of the Contract, until the building or specific portions thereof have been accepted by the Owner.

.6 Report existing unknown services encountered during excavation to Consultant for instructions; cut back and cap or plug unused services. Be responsible for the protection of all active services encountered and for repair of such services if damaged.

1.28 Safety Program and Security

.1 Occupational Health and Safety Act 1991: Obey all Federal, Provincial and Municipal Laws, Acts, Statutes, Regulations, Ordinances and By-laws which could in any way, pertain to the work outlined in the Contract, or to any employees of the Contractor. Satisfy all statutory requirements imposed by the Occupational Health and Safety Act and Regulations made thereunder, on a Contractor, and Constructor and/or Employer with respect to or arising out of the performance of the Contractors obligations under this Contract.

.2 The Contractor will be the “Constructor” as defined by the Occupational Health and Safety Act and will file a Notice of Project with the Ontario Ministry of Labour prior to commencement of the work.

.3 Comply with the National Building Code of Canada, Part 8, “Safety Measures on Construction and Demolition Sites”, and the National Fire Code of Canada.

.4 Confined Space: Where applicable, provide the Consultant and all Regulatory Authorities with a copy of the Contractors’ Confined Space Entry Procedure. In the event that defined procedures

are not available, abide by the applicable requirements of the Occupational Health and Safety Act and all regulations made thereunder.

.5 The attention of the Contractor and all sub-contractors is drawn to the fact that a total safety program is in effect at the Owner's property and shall be strictly adhered to. The Contractor is responsible for obtaining the most recent copy from the Owner.

.6 Owner subscribes to the principle that the safety of all persons, whether they be invitees or licensees, be maintained to all practicable extent, during all periods of time such persons remain on the Owner's premises, inside or outside of buildings, shops, plants, etc.

.7 The supervisor of the project, representing the Contractor, will be responsible for his employees and subcontractors/suppliers maintaining standard safety practices, as well as the specific safety rules listed below, while working on the Owner's property.

.8 The following Acts and the regulations made thereunder (latest revisions), shall not be contravened:
- .1 The Occupational Health and Safety Act 1991 and Regulations for Construction Projects O. Reg. 213/91
- .2 The Power Commission Act
- .3 The Boiler and Pressure Vessels Act
- .4 The Elevators and Lifts Act
- .5 The Operating Engineer's Act
- .6 The Occupational Health and Safety Act, 1991 and Regulations for Industrial Establishments
- .7 The Ontario Building Code
- .8 The National Building Code
- .9 The Fire Marshals Act
- .10 Owner's Safety Standards
- .11 Any other act or regulation of any authority having jurisdiction.

.9 The Owner or the Owners representative reserves the right to order individuals to leave the site if the individual is in violation of any safety requirement or any Act, any expense incurred will be the responsibility of the Contractor.

.10 Without restricting the generality of the foregoing clauses, the following specific safety rules have been written:
- .1 Hard Hats must be worn in construction area. Provide CSA approved hard hats for use by visitors to the site.
- .2 Safety Harness: A safety harness with a life line attached shall be worn by employees working in tanks or bins or in any area where there is a danger of anyone being overcome by fumes, or where it would be difficult to remove a man in case of emergency. An attendant must be stationed outside to render aid in case of trouble.
- .3 Padlocks and Danger Tags: Where there is a danger of equipment being energized, the motor switch on all individual motor drives shall be locked in the open position. The Contractor shall affix his own lock (I man = I lock) and in addition, a danger tag shall also be applied to the switch handle bearing a brief description of the work being done. The tag and lock shall remain in place until the work has been completed. In the case where air, steam or liquid is the motivating power the valves shall be locked in the closed position and blanked.
- .4 Electrical: Only three-wire grounded equipment shall be used for a 110 volt power supply. Plugs and cords shall be in good repair.
- .5 Under no circumstances shall a connection be made to such an outlet except through an approved three-wire plug. Insertion of bare wires in a female outlet is strictly prohibited.

.6 When the Contractor requires a hook-up for a welder where a standard outlet is not available or where his machine must be hooked into a switch, the owners Maintenance Department must be called. Under no circumstances shall the Contractor attempt the work himself.

.7 Oxygen: Acetylene and Arc Welding:

.1 Welding or Burning Permit must be obtained from the Owner's security department before any such work is started.

.2 When arc welding is to be done in the vicinity of the owners employees, approved shields must be used. Shields must be supplied by the Contractor.

.3 If a gasoline powered generator is used, adequate ventilation must be provided.

.4 All electrical supply lines for arc welding must be kept in good repair.

.5 Compressed Gas Cylinders: The following rules shall apply to compressed gas cylinders on the Owner's property:

.1 Storage: All compressed gas cylinders must be stored in a ventilated area which is located away from traffic and free from falling material. Full cylinders must be stored in a separate area from empty cylinders. In all cases cylinders must be fastened securely in an upright position, the valves closed and safety caps in place, hand tight.

.2 Transportation: All cylinders being transported must be fastened securely in an upright position with the safety caps in place. No cylinder full or empty shall be transported lying across the forks of lift trucks, shop trucks, etc.

.3 Usage: During use, cylinders must be fastened securely in an upright position in an approved cart. In no case shall cylinders be used in a lying down position on shop trucks, stock baskets, etc. They shall never be used as rollers or for any purpose other than to carry gas. Cylinders must be kept away from sparks, slag or excessive heat. Oil or grease should never come in contact with the bottles, lines or gauges.

.4 Disposition of Empty Cylinders: When cylinders are empty, they are to be taken to the empty storage area immediately. In no case are the empty cylinders to be left standing in the work area or left lying on the floor, on scrap heaps, shop trucks or left in the yard. When the Contract is complete, the Contractor will be responsible for removing all cylinders under their jurisdiction from Owner's property.

.8 Equipment: General

.1 All straight ladders must be free of damage; i.e. cracks or broken rungs, and must have adequate safety feet. They must not be placed on boxes, etc. or placed in a doorway unless someone is stationed at the bottom. All ladders must be tied-off.

.2 Suspended loads must not be left unattended and must not be moved over the heads of anyone.

.3 When overhead work is in progress, the floor area should be roped off to prevent possible injury to anyone working or passing below.

.4 No one is to work over hot or corrosive materials without proper planking in addition to a safety belt and life line.

.5 Lift trucks must be equipped with an overhead screen guard and the forks must be straight and properly positioned. In addition, the vehicle should be large enough for the work involved.

.6 All welders and gasoline powered equipment to be vented to exterior.

.9 Housekeeping

.1 Scrap and refuse shall be removed from the work area daily.

.2 Oily and waste solvent rags are a fire hazard and shall be deposited in approved containers.

.3 Conduit, pipe or structural steel must not be left in such a way that it constitutes a hazard.

.4 All openings in the roof or floor must be guarded to prevent anyone from falling through or to prevent stock or scrap from dropping down.

.5 Outside holes or pits must be guarded and provided with warning lights.
.6 Loose equipment, tools, etc., must be cleaned off overhead areas before leaving each day.
.7 Boards with protruding nails must not be left on the floor. In addition, bolts, etc., must be cut off at floor level to eliminate a possible tripping hazard.
.8 Access routes to and from the work area from exterior shall be kept free from the accumulation of waste products and dirt.

1.29 Dust Control

.1 Be solely responsible for controlling dust nuisances resulting from his operations, both within the work limits and elsewhere. Quantities of water and calcium chloride shall be supplied and applied by the Contractor to those areas as being necessary and unavoidable for the prevention of dust nuisance or hazard to the area, as directed by the Consultant at no additional cost.

.2 Care shall be taken to control dust within the plant. Provide adequate protection and dust screens to the complete satisfaction of the Consultant and as indicated on the drawings.

1.30 Hazardous Materials

.1 Definition: "Hazardous Material" is material, in any form, which by its nature, may be flammable, explosive, irritating, corrosive, poisonous, or may react violently with other materials, if used, handled or stored improperly. Included are substances prohibited, restricted, designated or otherwise controlled by law.

.2 Comply with the Owner's "Hazardous Materials" program. Adherence to this program will ensure the safety of employees, the public, protect the company's property and preserve the environment.

.3 "Hazardous Materials" will not be introduced for experimental or any other use prior to being evaluated for hazards.

.4 Make known to the Owner those "hazardous materials" he intends to use in the workplace and receive "Permission to Use" before introducing to the Owner's property. Be responsible for providing any content data and safe use data, as may be required.

.5 Many common construction materials such as asbestos pipe and various insulations are hazardous materials or contain hazardous materials and should not be used except where allowed in writing by the Owner. Certain materials cannot be used under any circumstances and are banned from the Owners facilities.

.6 When any material, which constitutes a hazard, is to be used, the Owners and Engineer should be consulted prior to bid submission to ensure adequate allowances have been made for that the proper procedures to be followed at all times.

.7 Asbestos Control Program:
.1 All asbestos work must be in accordance with Ontario Regulation 654/85, "Regulation Respecting Asbestos on Construction Projects and in Buildings and Repair Operations made under the Occupational Health and Safety Act".
.2 All asbestos disposal must conform to the Environmental Protection Act, Regulation No. 347.

1.31 Security

.1 Be responsible for security of all areas affected by work of this Contract, until taken over by Owner.

.2 Take steps to prevent entry to the work by unauthorized persons and guard against theft, fire and damage by any cause.

1.32 Signs

.1 With the exception of safety signs or notices do not erect any signs unless approved by the Consultant.

.2 Erect signs related to safety on the work, or mandatory regulation notices.

.3 Prior to commencement of work wherein hazardous or volatile cements, coatings, or substances are used, brricade entire area and post adequate number of "NO SMOKING" signs.

1.33 Quality Control

.1 Requirements specified herein apply to independent inspection and testing specified under technical Specification Sections.

.2 Requirements specified herein do not apply to the following:
- .1 Inspection and testing required by laws, ordinances, rules, regulations and orders by public authorities.
- .2 Testing, adjustment and balancing of mechanical and electrical systems and equipment.
- .3 Inspection and testing performed exclusively for Contractor's convenience.

.3 Refer to technical specification sections for specific inspection and testing requirements.

.4 Testing agency shall do the following:
- .1 Act on a professional and unprejudiced basis and carry out inspection and testing functions to establish compliance with requirements of Contract Documents.
- .2 Check work as it progresses. Failure to detect defective work or materials shall not in any way present later rejection when such defect is discovered, nor shall it obligate Consultant for final acceptance.
- .3 Prepare reports stating results of tests and conditions of work and state in each report whether specimens tested conform to requirements of Contract Documents, specifically noting deviations.
- .4 Distribute reports as follows:
  - .1 Consultant
  - .2 Contractor

.5 Testing agency is not authorized to amend or release any requirements of Contract Documents, nor to approve or reject any portion of work.

.6 Contractor shall do the following:
- .1 Notify testing agency well in advance of operations to allow for assignment of personnel and scheduling of tests.
- .2 Provide testing agency with access to work at all times.
- .3 Supply material samples for testing.

.4 Supply casual labour and other incidental services required by testing agency.
.5 Provide facilities for site storage of samples.

.7 When initial inspection and testing indicates noncompliance with Contract Documents, any subsequent re-inspection and retesting occasioned by noncompliance shall be performed by same testing agency and cost thereof borne by Contractor.

.8 Employment of independent testing agency shall in no way relieve Contractor of his obligation to perform work in accordance with requirements.

1.34 Spills Reporting

.1 Spills or discharges of pollutants or contaminants under the control of the Contractor, and spills or discharges of pollutants or contaminants that are a result of the Contractor's operations that cause or are likely to cause adverse effects shall forthwith be reported to the Consultant. Such spills or discharges and their adverse effects shall be as defined in the Environmental Protection Act.

.2 All spills or discharges of liquid, other than accumulated rain water, from luminaries, internally illuminated signs, lamps, and liquid type transformers under the control of the Contractor, and all spills or discharges from this equipment that are a result of the Contractor's operations shall, unless otherwise indicated in the Contract, be assumed to contain PCB's and shall be reported to the Consultant.

.3 This reporting will not relieve the Contractor of his legislated responsibilities regarding such spills or discharges.

1.35 Protection of Water Quality

.1 At all times maintain existing stream flows and shall control all construction work so as to allow sediment or other deleterious materials to enter streams.

.2 No waste or surplus organic material including topsoil is to be stored or disposed of within 30 metres of any watercourses. Run-off from excavation piles will not be permitted to drain directly into watercourses but shall be diffused onto vegetative areas a minimum of 30 metres from the watercourse. Where this measure is not sufficient or feasible to control sediment entering the watercourses, sedimentation traps or geotextile coverage will be required.

.3 If dewatering is required, the water shall be pumped into a sedimentation pond or diffused onto vegetated areas a minimum of 30 metres from the watercourses and not pumped directly into the watercourses.

.4 All dewatering required to properly complete the work of this contract is to be included in the contract price.

1.36 Fire Protection Requirements

.1 Provide fire protection to the finished project as indicated on the drawings and in the Technical Sections of the Specifications.

.2 Test methods used to determine fire hazard classifications and fire performance ratings of assemblies and materials shall be as required by the Ontario Building Code.

.3 Materials and components used to construct fire rated assemblies and materials requiring fire hazard classification shall be listed and labelled or otherwise approved by the appropriate authority. Labelled materials and their packaging shall bear fire rating authorities label showing product classification.

.4 Fire rated door assemblies shall include doors, frames, anchors and hardware and shall bear label of fire rating authority showing opening classification and rating.

.5 Materials having a fire hazard classification shall be installed in accordance with the fire rating authorities printed instructions.

.6 Fire rated assemblies and all components shall be in accordance with the referenced design criteria. Deviations from the requirements of the referenced authority will not be permitted.

.7 Construct all fire rated assemblies as continuous, uninterrupted elements, except for permitted openings. Extend rated walls or partitions from the floor to the underside of the structure above.

.8 Fill and patch voids and gaps around openings and penetrations and at the perimeter of the assembly to maintain continuity and to produce a fire resistant smoke tight seal.

1.37 Cleaning

.1 Keep building and site free from accumulation of dirt, debris and excess materials. Remove oily rags and waste from premises at close of each day, or more often if required.

.2 Vacuum clean all areas prior to painting. Take care to settle and minimize dust before painting begins. Use commercial type vacuum cleaners.

.3 Close rooms and areas finished by painter and decorators to all but authorized persons.

.4 On completion of work remove stains and smudges from paint work, hardware, aluminum and other finished surfaces and wash and polish glass.

.5 Replace all broken, damaged or scratched glass other than those which have been broken or damaged by those installing them which shall be replaced by the installers.

.6 Use appropriate apparatus and cleaning materials. Clean manufactured articles in strict accordance with the manufacturer's directions in each case.

.7 Upon completion of final cleaning, remove cleaning equipment, materials and debris from the Building and Site.

1.38 Record Drawings

.1 Obtain prints of all drawings and record any revisions to the work as detailed and shown on the Drawings. Provide Consultant with these drawings at completion of work.

.2 Recording of the 'as-built' changes shall be performed on a day-to-day basis.

1.39 Interference Drawings

.1 Prepare interference and equipment placing drawings to ensure that all components will be properly accommodated within the spaces provided.

.2 Prepare drawings to indicate coordination and methods of installation of a system with other systems where their relationship is critical. Ensure that all details of equipment apparatus and connections are coordinated.

.3 Ensure that clearances required by jurisdictional authorities and clearances for proper maintenance are indicated on drawings.

.4 Upon Consultant's request, submit copies of interference drawings to Consultant.

PART 2 PRODUCTS

2.1 Not Used

.1 Not Used

PART 3 EXECUTION

3.1 Not Used

.1 Not Used

End of Section

LIST OF DRAWINGS

Dwg. No.	Title	Issue No.	Rev. No.	Issue Date
ARCHITECTURAL				
A000	Cover Sheet and Drawing List	1	-	February 24, 2025
A201	Roof Plan and General Notes	1	-	February 24, 2025
A501	Details	1	-	February 24, 2025
A502	Details	1	-	February 24, 2025
A503	Details	1	-	February 24, 2025
STRUCTURAL				
S201	Structural Roof Plan and General Notes	1	-	February 24, 2025
MECHANICAL				
M1	Mechanical Roof Plan and Schedules	1	-	February 24, 2025
M2	Mechanical Specifications	1	-	February 24, 2025
ELECTRICAL				
E1	Electrical Roof and Basement Power Plan	1	-	February 24, 2025
E2	Electrical Single Line and Specifications	1	-	February 24, 2025

End of Section

PART 1 GENERAL

1.1 Section Includes

.1 Work covered by contract documents
.2 Location of the site
.3 Permits and approvals
.4 Site access
.5 Contractor traffic route
.6 Work sequence
.7 Contractor use of premises
.8 References and codes
.9 Engineer design
.10 Hazardous material discovery
.11 Building smoking environment
.12 Special conditions
.13 Site security
.14 Protection of Drawings
.15 “By Others”

1.2 Work Covered by Contract Documents

.1 Work of this Contract comprises the **Roof Replacement at the Woollen Mill in Peterborough** on behalf of The Peterborough Housing Corporation, and as indicated on the drawings and specifications.

1.3 Location of Site

.1 The Work of this Contract is located at 526 McDonnel Street, Peterborough, Ontario.

1.4 Permits and Approvals

.1 Comply with the requirements of the City of Peterborough.

.2 Comply with the City of Peterborough Bylaws.

.3 Obtain and pay for all necessary permits and licenses required to complete the work.

1.5 Site Access

.1 Access to the site to be arranged by the Owner.

.2 Provide secure construction fencing and/or temporary hoarding as specified and where directed by the Owner. Do not impede exits and entrances.

.3 Include for all on and off-site storage and staging as required, site storage and marshalling areas are limited. Coordinate with the Peterborough Housing Corporation staff for access and location of storage.

1.6 Contractor Traffic Route

.1 Commercial motor vehicles are defined as any heavy equipment, tractor trailers, cranes, any vehicle towing a trailer, and delivery type trucks larger than cube vans.
.2 Maintain fire department access/control.

.3 Maintain access for owner's employees and visitors.

.4 Comply with City of Peterborough bylaws for street access.

1.7 Work Sequence

.1 Construct Work continuously.

1.8 Contractors Use of Premises

.1 Contractor has restricted use of designated areas of the site until Substantial Performance, in accordance with Peterborough Housing Corporation scheduling and access arrangements.

.2 Provide minimum 48 hours' notice prior to carrying any disruptive work inside the building and obtain Owner's approval prior to proceeding. All works to occupied areas are to be at premium rate for after hours and weekend working.

.3 Include for all work which cause vibrations, noises or any disruptions to Owner's ongoing work inside the facility, to be completed after hours as follows or to suit local by-laws: Monday-Friday 5.00 pm to 8.00 am, Saturday-Sunday 12.00 am to 11:59 pm. Include for all noisy works at premium rate.

1.9 References and Codes

.1 Perform Work in accordance with Ontario Building Code (OBC), National Fire Code of Canada (NFC), the Canadian Electrical Code CSA C22.1-15, and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.

.2 Meet or exceed requirements of:
.1 Contract documents.
.2 Specified standards, codes and referenced documents.

1.10 Engineer Design

.1 Where specifications require work to be designed by an engineer, engage an engineer licensed in the Province of Ontario to design such work.

1.11 Hazardous Material Discovery

.1 Refer to Designated Substances reports provided by the Owner for known hazardous materials and designated substances.

.2 Should any other material not identified in the above referenced report material and resembling asbestos or other hazardous substances be encountered in course of demolition work, immediately stop work and notify the Consultant.

1.12 Building Smoking Environment

.1 Smoking is prohibited in all workplaces within the Owner's buildings and on Peterborough Housing Corporation property.

1.13 Special Conditions

.1 The building will be fully occupied by residents and by Peterborough Housing Corporation Staff during the completion of this contract. Extreme care must be taken to ensure their safety.

.2 All existing surfaces and finishes are to be repaired wherever damaged during the course of the Work.

1.14 Site Security

.1 Contractor to adhere to all Peterborough Housing Corporation security requirements while on site.

1.15 Protection of Drawings

.1 Copyright of electronic document belongs to the Consultant. Electronic documents may not be forwarded to others, transmitted, downloaded or reproduced in any format, whether print or electronic, without the express, written permission of the copyright owner.

.2 Drawings, specifications and other contract related documents which are posted on Contractor controlled websites for access by sub-trades and suppliers, shall be posted only on password protected and secure websites approved by the Consultant to limit access to those with an expressed interest in the Project.

.3 Provide Consultant and owner with access to such websites as noted above.

1.16 "By Others"

.1 The term "by others" where it is used in the contract documents means that work shown or described in the contract documents and labeled with this designation is not included in the specific sub-trade's scope

PART 2 PRODUCTS

3.1 Not Used

.1 Not used

PART 3 EXECUTION

3.2 Not Used

.1 Not used

End of Section

PART 1 GENERAL

1.1 General

.1 Conform to the requirements of Division 1.

1.2 Related Sections

.1 Section 01 31 00 Project Management and Coordination
.2 Section 01 33 00 Submittal Procedures

1.3 Request for Information (RFI)

.1 A request for information (RFI) is a formal process used during the Work to obtain an interpretation of the Contract Documents or to obtain additional information.
.1 An RFI shall not constitute notice of claim for a delay.

1.4 Submittal Procedures

.1 Make submittals in accordance with Section 01 33 00 – Submittal Procedures.
.1 Number RFI's consecutively in one sequence in order submitted, in numbering system as established by the Contractor.

.2 Submit one distinct subject per RFI form. Do not combine unrelated items on one form.

.3 RFI form:
.1 Submit RFI's to the Consultant on approved "Request for Information" form. The Consultant shall not respond to an RFI except as submitted on this form.
.2 Where RFI form does not have sufficient space to provide complete thereon, attach additional sheets as required.
.3 Submit with RFI form all necessary supporting documentation.

.4 RFI log:
.1 Maintain log of RFI's sent to and responses received from the Consultant, complete with corresponding dates.
.2 Submit updated log of RFI's at each construction meeting and with each application for payment submission.

.5 Submit RFI's sufficiently in advance of affected parts of the Work so as not to cause delay in the performance of the Work. Costs resulting from failure to do so will not be paid by the Owner.

.6 Only the Contractor shall submit RFI's to the Consultant.

.7 RFI's submitted by Subcontractors or Suppliers directly to the Consultant will not be accepted.

1.5 Screening of RFI's

.1 Contractor shall satisfy itself that an RFI is warranted by undertaking a thorough review of the Contract Documents to determine that the claim, dispute, or other matters in question relating to the performance of the Work or the Interpretation of the Contract Documents cannot be resolved by direct reference to the Contract Documents. Contractor shall describe in detail this review on the RFI form as part of the RFI submission.

RFI submittals that lack such detailed review description, or where the detail provided is, in the opinion of the Consultant, insufficient, shall not be reviewed by the Consultant and shall be rejected.

1.6 Response to RFI's

.1 Consultant shall review RFI's from the Contractor submitted in accordance with this section with the following understandings:
  .1 Consultant's response shall not be considered as a Change Order or Change Directive, nor does it authorize changes in the Contract Price or Contract Time or changes in the Work.
  .2 Only the Consultant shall respond to RFI's. Responses to RFI's received from entities other than the Consultant shall not be considered.

1.7 Response Timing

.1 Allow 5 Working Days for review of each RFI by the Consultant.

.2 Consultant's review of RFI commences on date of receipt of RFI submission by the Consultant from Contractor and extends to date RFI returned by Consultant.

.3 When the RFI submission is received by Consultant before noon, review period commences that day. When RFI submittal is received by Consultant after noon, review period begins on the next Working Day.

.4 If, at any time, the Contractor submits a large enough number of RFI's or the Consultant considers the RFI to be of such complexity that the Consultant cannot process these RFI's within 5 Working Days, the Consultant will confer with the Contractor within 3 Working Days of receipt of such RFI's, and the Consultant and the Contractor will jointly prepare an estimate of the time necessary for processing same as well as an order of priority among the RFI's submitted. The Contractor shall accommodate such necessary time at no increase in the Contract Time and at no additional cost to the Owner.

PART 2 PRODUCTS

2.1 Not Used

.1 Not used

PART 3 EXECUTION

3.1 Not Used

.1 Not used

End of Section

PART 1 GENERAL

1.1 General

.1 Conform to the requirements of Division 1.

1.2 Preconstruction Conference

.1 The Consultant will call for and administer Preconstruction Conference at time and place to be announced.

.2 Contractor, all major Subcontractors, and major suppliers shall attend the Preconstruction Conference.

.3 Agenda will include, but not be limited to, the following items.
- .1 Lines of communication and contact information
- .2 Schedules
- .3 Personnel and vehicle permit procedures
- .4 Use of premises
- .5 Location of any Contractor on-Site facilities
- .6 Security
- .7 Housekeeping
- .8 Submittal and RFI procedures
- .9 Inspection and testing procedures, on-Site and off-Site
- .10 Control and reference point survey procedures
- .11 Health and Safety
- .12 Contractor's Schedule of Values
- .13 Contractor's Schedule of Submittals

.4 The Consultant will distribute copies of minutes to attendees. Attendees shall have seven (7) days to submit comments or additions to minutes. Minutes will constitute final documentation of results of Preconstruction Conference.

1.3 Project Meetings

.1 The Contractor will arrange project meetings and assume responsibility for setting times and recording and distributing minutes.

.2 Project meetings shall be held bi-weekly.

.3 Meeting minutes shall be distributed to all parties within three days of the meeting.

.4 Attendees at project meetings shall include at a minimum; Owner, Consultant, Contractor Project Manager, and Site Superintendent and major subcontractors.

1.4 Safety Meetings

.1 Conduct monthly contractor safety committee meetings.

.2 Conduct weekly toolbox talks.

1.5 On-Site Documents

.1 Maintain at job site, one copy each of the following:
.1 Contract drawings.
.2 Specifications.
.3 Addenda.
.4 Reviewed shop drawings.
.5 Requests for Information (RFI's)
.6 Change orders.
.7 Other modifications to Contract.
.8 Field test reports.
.9 Copy of approved Work schedule.
.10 Manufacturers' installation and application instructions.
.11 Health and Safety Plan and Other Safety Related Documents.
.12 Other documents as specified.

1.6 Schedules

.1 Submit a construction progress schedule to Consultant within 10 working days of the Contract award and at least 10 working days prior to the submission of the first progress claim. The construction progress schedule must show anticipated progress stages and final completion of the work within the time periods required by the Contract documents.

.2 During progress of Work revise and resubmit as directed by Consultant.

.3 The current project schedule shall be tabled at each regular site meeting.

1.7 Requests for Information (RFI's)

.1 Refer to Section 01 26 15 – Requests for Information

1.8 Closeout Procedures

.1 Notify Consultant when Work is considered ready for Substantial Performance.

.2 Accompany Consultant on preliminary inspection to determine items listed for completion or correction.

.3 Comply with Consultant's instructions for correction of items of Work listed in executed certificate of Substantial Performance.

.4 Notify Consultant of instructions for completion of items of Work determined in Consultant's final inspection.

1.9 Cost Breakdown

.1 Submit a detailed cost breakdown to Consultant at least ten (10) working days prior to the submission of the first progress claim. After approval by Consultant the cost breakdown will be used as basis for progress payment.

PART 2 PRODUCTS

2.1 Not Used

.1 Not used

PART 3 EXECUTION

3.1 Not Used

.1 Not used

End of Section

PART 1 GENERAL

1.1 Section Includes

.1 Submittals
.2 Schedules Required
.3 Format
.4 Submission
.5 Critical Path Scheduling
.6 Submittals Schedule

1.2 Related Sections

.1 Section 01 33 00 Submittal Procedures
.2 Section 01 77 00 Closeout Procedures

1.3 Submittals

.1 Make submittals in accordance with Section 01 33 00 – Submittal Procedures.

1.4 Schedules Required

.1 Submit schedules as follows:
  .1 Construction Progress Schedule.
  .2 Submittal Schedule for Shop Drawings and Product Data.
  .3 Submittal Schedule for Samples.
  .4 Product Delivery Schedule.
  .5 Shutdown or closure activity.

1.5 Format

.1 Prepare schedule in form of a horizontal bar chart using Microsoft Project 2010 or later.

.2 Provide a separate bar for each major item of work, trade or operation.

.3 Split horizontally for projected and actual performance.

.4 Provide horizontal time scale identifying first work day of each week.

.5 Format for listings: chronological order of start of each item of work.

.6 Identification of listings: By Systems description.

1.6 Submission

.1 Submit initial format of schedules within 15 working days after award of Contract.

.2 Submit schedules in electronic format, by email as PDF files.

.3 Consultant will review schedule and return review copy within 10 days after receipt.

.4 Resubmit finalized schedule within 7 days after return of review copy.

.5 Submit revised progress schedule with each application for payment.

.6 Distribute copies of revised schedule to:
.1 Job site office.
.2 Subcontractors.
.3 Other concerned parties.
.4 Instruct recipients to report to Contractor within 10 days, any problems anticipated by timetable shown in schedule.

.7 Table current and up to date schedule at each regular site meeting.

1.7 Critical Patch Scheduling

.1 Include complete sequence of construction activities.

.2 Schedules shall represent a practical plan to complete the work within the Contract period, and shall convey the plan to execute the work. Schedules as developed shall show the sequence and interdependencies of activities required for complete performance of the work.

.3 The submittal of schedules shall be understood to be the Contractor's representation that the schedule meets the requirements of the Contract Documents and that the work will be executed in the sequence and duration indicated in the schedule.

.4 Failure to include any element of work required for performance of the Contract or failure to properly sequence the work shall not excuse the Contractor from completing all work within the Contract Time.

.5 All schedules shall be developed utilizing industry standard 'best practices' including, but not limited to:
.1 No open-ended activities.
.2 No use of constraints other than those defined in the Contract Documents without the prior approval of the Consultant.
.3 No negative leads or lags.
.4 No excessive leads or lags without prior justification and approval from the Consultant.
.5 For individual schedule construction activities, do not exceed 14 days in duration without prior approval of the Consultant. Subdivide activities exceeding 14 days in duration to an appropriate level.
.6 Sufficiently describe schedule activities to include what is to be accomplished in each work area. Express activity durations in whole days. Clearly define work that is to be performed by subcontract.
.7 Create the schedule in conformance with the work-hours and constraints set forth in these Contract Documents.

.6 Include dates for commencement and completion of each major element of construction as follows.
.1 Shop drawings
.2 Product lead times
.3 Demolition - each roof
.4 Roof replacement - each roof
.5 Mechanical removals/ replacements
.6 Allowance for poor weather

.7 Substantial completion

.7 Show projected percentage of completion of each item as of first day of month.

.8 Indicate progress of each activity to date of submission schedule.

.9 Show changes occurring since previous submission of schedule:
.1 Major changes in scope.
.2 Activities modified since previous submission.
.3 Revised projections of progress and completion.
.4 Other identifiable changes.

.10 Provide a narrative report to define:
.1 Problem areas, anticipated delays, and impact on schedule.
.2 Corrective action recommended and its effect.
.3 Effect of changes on schedules of other prime contractors.

1.8 Submittals Schedule

.1 Include schedule for submitting shop drawings, product data, and samples. Indicate manufacture and delivery lead times into the shop drawing submittal schedule.

.2 Indicate dates for submitting, review time, resubmission time, and last date for meeting fabrication schedule.

PART 2 PRODUCTS

2.1 Not Used

.1 Not used

PART 3 EXECUTION

3.1 Not Used

.1 Not used

End of Section

PART 1 GENERAL

1.1 General

.1 Conform to the requirements of Division 1.

1.2 Related Sections

.1 Section 01 26 15 Requests for Information
.2 Section 01 31 00 Project Management and Coordination

1.3 Administrative

.1 Submit to Consultant submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.

.2 Work affected by submittal shall not proceed until review is complete.

.3 Present shop drawings, product data, samples and mock-ups in metric units.

.4 Review submittals prior to submission to Consultant. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and coordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.

.5 Notify Consultant in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.

.6 Verify field measurements and affected adjacent work are coordinated.

.7 Contractor's responsibility for errors and omissions in submission is not relieved by Consultant's review.

.8 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Consultant’s review.

.9 Keep one reviewed copy of each submission on site.

1.4 Requests for Information (RFI’s)

.1 Refer to Section 01 26 15 – Requests for Information

1.5 Shop Drawings and Product Data

.1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided to illustrate details of a portion of Work.

.2 Coordinate each submission with requirements of work and Contract Documents. Individual submissions will not be reviewed until all related information is available.

.3 Submit shop drawings bearing stamp and signature of qualified professional Engineer registered or licensed in the Province of Ontario where required by the individual specification sections. Each submittal and each resubmittal must bear the stamp of the Engineer

.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 coordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.

.5 Allow ten (10) days for Consultant's review of each submission.

.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.

.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.

.8 Accompany submissions with transmittal letter containing:
- .1 Date.
- .2 Project title and number.
- .3 Contractor's name and address.
- .4 Identification and quantity of each shop drawing, product data and sample.
- .5 Other pertinent data.

.9 Submissions shall include:
- .1 Date and revision dates.
- .2 Project title and number.
- .3 Name and address of:
  - .1 Subcontractor.
  - .2 Supplier.
  - .3 Manufacturer.
- .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
- .5 Details of appropriate portions of Work as applicable:
  - .1 Fabrication.
  - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
  - .3 Setting or erection details.
  - .4 Capacities.
  - .5 Performance characteristics.
  - .6 Standards.
  - .7 Relationship to adjacent work.

.10 After Consultant's review, distribute copies.

.11 Submit one electronic copy in PDF format of shop drawings for each requirement requested in specification Sections and as Consultant may reasonably request.

.12 Submit electronic copy in PDF format 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.

.13 Delete information not applicable to project.

.14 Supplement standard information to provide details applicable to project.

.15 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.

.16 The review of shop drawings by the Consultant is for sole purpose of ascertaining conformance with general concept.
.1 This review shall not mean that the Consultant approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.
.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.

1.6 Samples

.1 Submit for review samples as requested in respective specification Sections. Label samples with origin, manufacturer, product information, applicable specification section, and intended use.

.2 Notify Consultant in writing, at time of submission of deviations in samples from requirements of Contract Documents.

.3 Where colour, pattern or texture is criterion, submit full range of manufacturer’s samples.

.4 Adjustments made on samples by Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Consultant prior to proceeding with Work.

.5 Make changes in samples which Consultant may require, consistent with Contract Documents.

.6 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

1.7 Certificates and Transcripts

.1 Submit Workers' Compensation Board status.

PART 2 PRODUCTS

2.1 Not Used

.1 Not used

PART 3 EXECUTION

3.1 Not Used

.1 Not used

End of Section

PART 1 GENERAL

1.1 Section Includes

.1 References.
.2 Owner's Regulations.
.3 Standards and Definitions.
.4 Designated Substances.
.5 Hazardous Materials.
.6 Access for Inspection and Testing.
.7 Other Regulatory Requirements.

1.2 Related Sections

.1 Section 01 70 03 Safety Requirements

1.3 References

.1 Perform Work in accordance with the Ontario Building Code Act, O. Reg. 332/12, the Ontario Building Code (OBC) including all Supplements and other codes of provincial or local regulation provided that in case of conflict or discrepancy, more stringent requirements apply.

.2 Where a material is designated in the Contract Documents for a certain application, unless otherwise specified, that material shall conform to standards designated in the Code. Similarly, unless otherwise specified, installation methods and standards of workmanship shall also conform to standards invoked by the aforementioned Code.

.3 Meet or exceed requirements of:
.1 Contract documents.
.2 Specified standards, codes and referenced documents.
.3 Manufacturer's instructions.

.4 Where requirements of Contract Documents exceed Code requirements provide such additional requirements.

.5 Where the Building Code or the Contract Documents do not provide all information necessary for complete installation of an item, then the manufacturer's instructions for first quality workmanship shall be strictly complied with.

1.4 Owner's Regulations

.1 Conform to requirements, regulations and procedures of the Owner.

1.5 Standards and Definitions

.1 Where a reference is made to specification standards produced by various organizations, conform to latest edition of standards, as amended and revised to date of Contract.

.2 Have a copy of each specified standard which relates to your work available on the site to be produced immediately on Consultant's request.

.3 Where a standard designates authorities such as the "Engineer", the "Owner" (when used in a sense other than that defined in the General Conditions) the "Purchaser" or some other such designation, these designations shall be taken to mean the Consultant.

.4 Wherever the words "acceptable", "approved", "satisfactory", "selected", "directed", “inspected”, “instructed”, “required”, "submit", or similar words or phrases are used in standards or elsewhere in the Contract Documents, it shall be understood that they mean, unless the context provides otherwise, "acceptable to the Consultant", "approved by the Consultant", "satisfactory to the Consultant", "selected by the Consultant", "directed by the Consultant", "inspected by the Consultant", "instructed by the Consultant", "required by the Consultant" and "submit to the Consultant".

1.6 Designated Substances

.1 Known designated substances are identified in the Designated Substance Report.

.2 Stop work immediately when material resembling asbestos, mould or any other designated substance which is not identified in the Designated Substance Report is encountered during the course of the work. Notify Owner and Consultant immediately.

.3 The Owner will arrange for independent testing of suspected designated substances and removal of such substances encountered on the site during the course of the work which are not identified in the Designated Substance Report.

1.7 Hazardous Materials

.1 Definition: "Hazardous Material" is material, in any form, which by its nature, may be flammable, explosive, irritating, corrosive, poisonous, or may react violently with other materials, if used, handled or stored improperly. Included are substances prohibited, restricted, designated or otherwise controlled by law.

.2 Hazardous Materials will not be introduced for experimental or any other use prior to being evaluated for hazards.

.3 Make known to the Consultant those hazardous materials or designated substances intended to be used in the workplace and receive permission to use before introducing to the Owner’s property.

.4 Provide MSDS for all materials brought to the Place of Work.

.5 Many common construction materials such as asbestos pipe and various insulations are designated substances and shall not be used under any circumstances. Such materials are banned from the Owner’s facilities.

1.8 Access for Inspection and Testing

.1 Cooperate fully with and provide assistance to, all outside authorities including Building Inspectors, utilities, testing agencies and consultants, with the inspection of the Work.

1.9 Other Regulatory Requirements

.1 Conform to the requirements of the Ontario Ministry of Transportation, Regional and Local authorities regarding transportation of materials.
Conform to the requirements of the Ontario Ministry of the Environment.

.2 Conform to the requirements of the Ontario Ministry of Labour.

.3 Conform to all applicable local by-laws, regulations and ordinances.

PART 2 PRODUCTS

2.1 Not Used

.1 Not used

PART 3 EXECUTION

3.1 Not Used

.1 Not used

End of Section

PART 1 GENERAL

1.1 General

.1 Conform to the requirements of Division 1.

1.2 Inspection

.1 Contractor is responsible for Quality Control (QC).

.2 Allow Owner and 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.

.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.

.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.

.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. If such Work is found in accordance with Contract Documents, Owner shall pay cost of examination and replacement.

1.3 Independent Inspection Agencies

.1 Independent Inspection/Testing Agencies will be engaged by Contractor for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by the Contractor and paid from the cash allowances.

.2 Provide equipment required for executing inspection and testing by appointed agencies.

.3 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.

.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 re-inspection.

1.4 Access to Work

.1 Allow inspection/testing agencies access to Work.

.2 Co-operate to provide reasonable facilities for such access.

1.5 Procedures

.1 Notify Owner and Consultant 48 hours in advance of requirement for tests, in order that attendance arrangements can be made.

.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.

.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 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Consultant as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.

.2 Make good other Contractor's work damaged by such removals or replacements promptly.

.3 If in opinion of Consultant it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Consultant will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Consultant.

1.7 Reports

.1 Submit electronic pdf format inspection and test reports to Consultant.

.2 Provide copies to Subcontractor of work being inspected or tested or manufacturer or fabricator of material being inspected or tested.

1.8 Contractors Responsibilities

.1 Contractor is responsible for the execution of the Construction Quality Plan and is to pay all costs for the execution of the Construction Quality Plan. Designate an experienced site representative for carrying out the Construction Quality Plan.

PART 2 PRODUCTS

2.1 Not Used

.1 Not used

PART 3 EXECUTION

3.1 Not Used

.1 Not used

End of Section

PART 1 GENERAL

1.1 Section Includes

.1 Construction aids.
.2 Site storage.
.3 Parking
.4 Offices
.5 Equipment and Material Storage.
.6 Sanitary facilities.
.7 Signage.
.8 Hoarding
.9 Shoring

1.2 References

.1 Canadian Standards Association (CSA International)
.1 CAN/CSA Z321-96 (R2006), Signs and Symbols for the Workplace

1.3 Installation and Removal

.1 Provide construction facilities in order to execute work expeditiously.

.2 Remove from site all such work after use.

1.4 Hoisting

.1 Provide, operate and maintain hoists and cranes required for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for use thereof.

.2 Hoists and cranes shall be operated by qualified operator.

1.5 Site Storage/Loading

.1 Confine the work and the operations of employees to limits described by the Owner's representative.

.2 There is limited space available on site for material storage and lay-down areas. Hoisting of materials will be required from remote parking areas and driveways.

.3 Do not unreasonably encumber the site and premises with products.

.4 All deliveries to the site must be scheduled so that there will be minimal onsite storage. Deliveries through areas open to the public must be approved by the Owner's Representative and timed for minimum disruption. Provide any necessary protection/shoring as required.

.5 Do not load or permit to load any part of Work with a weight or force that will endanger the Work.

1.6 Construction Parking

.1 Parking will be permitted on site at areas designated by the Owner provided it does not disrupt performance of Work or ongoing Owner's operations.

.2 Provide and maintain adequate access to project site.

.3 If authorized to use existing roads for access to project site, maintain such roads for duration of Contract and make good damage resulting from Contractors' use of roads.

1.7 Offices

.1 Space for onsite office will not be provided.

1.8 Equipment, Tool and Material Storage

.1 Provide and maintain, in a clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.

.2 Locate materials not required to be stored in weatherproof sheds on site in a manner to cause least interference with work activities.

1.9 Sanitary Facilities

.1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.

.2 Post notices and take such precautions as required by local health authorities. Keep area and premises in sanitary condition.

1.10 Construction Signage

.1 Direct requests for approval to erect a Contractor signboard to Consultant.

.2 Signs and notices for safety and instruction shall be in English. Graphic symbols shall conform to CAN/CSA Z321-96 (R2006).

.3 Post "Construction Zone" signage outside barrier and entrance to all work areas.

.4 Maintain approved signs and notices in good condition for duration of project and dispose of off-site on completion of project.

.5 Install signage to direct site traffic and deliveries to the Construction work areas.

.6 Post signage in public areas as required to alert to overhead danger.

PART 2 PRODUCTS

2.1 Not Used

.1 Not used

PART 3 EXECUTION

3.1 Not Used

.1 Not used

End of Section

PART 1 GENERAL

1.1 Section Includes

.1 Barriers.
.2 Environmental Controls.
.3 Traffic Controls.
.4 Fire Routes.

1.2 Installation and Removal

.1 Provide temporary controls in order to execute Work expeditiously.

.2 Remove from site all such work after use.

1.3 Hoarding

.1 Erect temporary site enclosure using new solid plywood hoarding, minimum 1.8 metres high. Provide gates as necessary. Maintain hoarding in good repair.

1.4 Guard Rails and Barricades

.1 Provide secure, rigid guard rails and barricades around perimeter of roofs.

.2 Provide as required by governing authorities.

1.5 Weather Enclosures

.1 Provide secure and weather tight closures to unfinished openings in roofs.

.2 Design enclosures to withstand wind pressure and snow loading.

.3 Design enclosures to meet Owner’s security requirements.

1.6 Dust Tight Screens

.1 Provide dust tight screens or partitions to localize dust generating activities, and for protection of workers, finished areas of Work and public.

.2 Maintain and relocate protection until such work is complete.

1.7 Access to Site

.1 Provide and maintain access roads, sidewalk crossings, ramps and construction runways as may be required for access to Work.

1.8 Public Traffic Flow

.1 Provide and maintain competent signal flag operators, traffic signals, barricades and flares, lights, or lanterns as required to perform Work and protect the public.

1.9 Fire Routes

.1 Maintain access to property including overhead clearances for use by emergency response vehicles.

1.10 Protection for Off Site and Public Property

.1 Protect surrounding private and public property from damage during performance of Work.

.2 Be responsible for damage incurred and any public use buildings that may require overhead safety.

1.11 Protection of Building Finishes

.1 Provide protection for finished and partially finished building finishes and equipment during performance of Work.

.2 Provide necessary screens, covers, and hoardings.

.3 Confirm with Consultant locations and installation schedule 3 days prior to installation.

.4 Be responsible for damage incurred due to lack of or improper protection.

PART 2 PRODUCTS

2.1 Not Used

.1 Not used

PART 3 EXECUTION

3.1 Not Used

.1 Not used

End of Section

PART 1 GENERAL

1.1 Section Includes

.1 Product quality, availability, storage, handling, protection, and transportation.
.2 Manufacturer's instructions.
.3 Quality of Work, coordination and fastenings.
.4 Existing Utilities

1.2 Quality

.1 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality (compatible with specifications) for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.

.2 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.

.3 Should any dispute arise as to quality or fitness of products, decision rests strictly with Consultant based upon requirements of Contract Documents.

.4 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.

1.3 Availability

.1 Review product delivery requirements and anticipate foreseeable supply delays for any 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.

.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 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.

.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.

.3 Store products subject to damage from weather in weatherproof enclosures.

.4 Remove and replace damaged products at own expense and to satisfaction of Consultant.

.5 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 Pay costs of transportation of products required in performance of Work.

1.6 Manufacturer's Instructions

.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 with Consultant confirmation.

.2 Notify Consultant in writing, of conflicts between specifications and manufacturer's instructions, so that Consultant may establish course of action.

.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 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed.

.2 Immediately notify Consultant if required Work is such as to make it impractical to produce required results.

.3 Do not employ anyone unskilled in their required duties. Consultant reserves right to require dismissal from site, workers deemed incompetent or careless.

.4 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Consultant, whose decision is final.

1.8 Coordination

.1 Ensure cooperation of workers in laying out Work. Maintain efficient and continuous supervision.

.2 Be responsible for coordination and placement of openings, sleeves and accessories.

1.9 Remedial Work

.1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Coordinate adjacent affected Work as required.

.2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.10 Fastenings

.1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.

.2 Prevent electrolytic action between dissimilar metals and materials.

.3 Use non corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.

.4 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.

.5 Keep exposed fastenings to a minimum, space evenly and install neatly.

.6 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

1.11 Protection of Work in Progress

.1 Adequately protect Work completed or in progress. Work damaged or defaced due to failure in providing such protection is to be removed and replaced, or repaired, as directed by Consultant, at no increase in Contract Price or Contract Time.

.2 Prevent overloading of any part of building. Do not cut, drill or sleeve any load bearing structural member, unless specifically indicated without written approval of Consultant.

1.12 Hazardous Materials

.1 Report any found or suspected hazardous materials to the Owner.

PART 2 PRODUCTS

2.1 Not Used

.1 Not used

PART 3 EXECUTION

3.1 Not Used

.1 Not used

End of Section

PART 1 GENERAL

1.1 Section Includes

.1 Safety Requirements
.2 Fire Protection
.3 Accident Reporting
.4 Records on Site

1.2 References

.1 Federal regulations, latest edition including all amendments up to project date:
  .1 Fire Commissioners of Canada, FC 301, Standard for Construction Operations.
  .2 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations.
.2 Provincial regulations, latest edition including all amendments up to project date:
  .1 Ontario Building Code.
  .2 Occupational Health and Safety Act.
.3 NFPA 241 Standard for Safeguarding Construction, Alteration, and Demolition Operations, 2013 Edition

1.3 Submittals

.1 Make submittals in accordance with Section 01 33 00 – Submittal Procedures.

.2 Submit to Owner and Consultant copies of the following documents, including updates issued:
  .1 Notice of Project filed with Provincial Ministry of Labour or equivalent for Place of Work
  .2 Site-specific Health and Safety Plan prior to commencement of work on the work site. Plan shall include but not be limited to the following:
    .1 Name and contact info of Contractor's Health and Safety Representative for Work Site; including twenty-four (24) hour emergency contact phone numbers.
    .2 Phone numbers of local fire, police, and ambulance outside of 911 services.
    .3 Location of nearest medical facility and level of injury that each can service.
  .3 Submit to the Owner for review, a “Fire Safety Plan” conforming to Section 2.14 of the National Fire Code of Canada. Maintain a copy of the “Fire Safety Plan” on site.
  .4 Copies of certification for all employees on site of applicable safety training including, but not limited to:
    .1 WHIMIS.
    .2 Fall arrest and protection.
    .3 Working at Heights.
    .4 Suspended Access Equipment.
    .5 Erection of Scaffolding.
    .6 License for powder actuated devices.
  .5 Material Safety Data Sheets (MSDS) of controlled products to be used.
  .6 On-site Contingency and Emergency Response Plan addressing:
    .1 Standard procedures to be implemented during emergency situations.
    .2 Preventative planning and protocols to address possible emergency situations.
.3 Guidelines for handling, storing, and disposing of hazardous materials that maybe encountered on site, including measures to prevent damage or injury in case of an accidental spill.
.4 Incident and accident reports, promptly if and upon occurrence
  .1 Reports or directions issued by authorities having jurisdiction, immediately upon issuance from that authority.
  .2 Accident or Incident Reports, within 24 hours of occurrence.

.5 Submit other data, information and documentation upon request by the Consultant as stipulated elsewhere in this section.

1.4 Compliance Requirements

.1 Comply with the latest edition of the Ontario Occupational Health and Safety Act, and the Regulations made pursuant to the Act.

1.5 Constructor

.1 The Contractor will be the “Constructor” as defined by the Occupational Health and Safety Act, will file a Notice of Project with the Ontario Ministry of Labour prior to commencement of the work and will pay all associated fees.

.2 The “Constructor” will be solely responsible for the safety of all persons on the Site.

1.6 Safety Requirements

.1 Observe and enforce all construction safety measures and comply with the latest edition and amending regulations of the following documents and in the event of any differences among those provisions, the most stringent shall apply:
  .1 Occupational Health and Safety Act and Regulations for Construction Projects, August 1997, Ontario Regulation 213/91 including amendments.
  .2 Hazardous Products Act and Canada Labour Code.
  .3 The Workplace Safety and Insurance Board, O-Reg 454.
  .4 Ontario Building Code Act, Ontario Regulation 332/12 including amendments.
  .5 National Building Code of Canada, Part 8: Safety Measures on Construction and Demolition Sites.
  .6 National Fire Code of Canada.
  .7 NFPA 241 Standard for Safeguarding Construction, Alteration, and Demolition Operations, 2013 Edition
  .8 Environmental Protection Act.
  .9 The Power Commission Act.
  .10 The Boiler and Pressure Vessels Act.
  .11 The Elevators and Lifts Act.
  .12 The Operating Engineer's Act.
  .13 Municipal statutes.

.2 Obey all Federal, Provincial and Municipal Laws, Acts, Statutes, Regulations, Ordinances and By-laws which could in any way, pertain to the work outlined in the Contract, or to any employees of the Contractor. Satisfy all statutory requirements imposed by the Occupational Health and Safety Act and Regulations made thereunder, on a Contractor, and Constructor and/or Employer with respect to or arising out of the performance of the Contractors obligations under this Contract.

.3 Confined Space: Where applicable, provide the Consultant and all Regulatory Authorities with a copy of the Contractors’ Confined Space Entry Procedure. In the event that defined procedures are not available, abide by the applicable requirements of the Occupational Health and Safety Act and all regulations made thereunder.

.4 The supervisor of the project, will be responsible for his employees and subcontractors/suppliers maintaining standard safety practices, as well as the specific safety rules listed below, while working on the Owner’s property.

.5 The Owner reserves the right to order individuals to leave the site if the individual is in violation of any safety requirement or any Act, and any expense incurred will be the responsibility of the Contractor.

.6 Notify the Owner should any hazardous condition become apparent.

.7 Enforce the use of CSA approved hard hats reflective vests, safety glasses, fire resistant clothing and safety boots for all persons entering or working at the construction site. Refuse admission to those refusing to conform to this requirement.

.8 Provide safeguard and protection against accident or injury to any person on the site, adjacent work areas and adjacent property.

.9 Provide safeguard and protection against damage to adjacent structures, properties and services.

1.7 Safety Meetings

.1 Site toolbox safety meetings will be held weekly for all Contractor employees and all sub trade contractors.

.2 Where a Joint Health and Safety Committee(s) is required on a project, workers and supervisors, selected, as members of the committee must attend.

1.8 Workplace Hazardous Materials Information System (WHMIS)

.1 Contractor to be familiar with WHIMIS regulations and be responsible for compliance.

.2 Contractor is responsible for all other requirements of regulations as applicable to Employers.

.3 All controlled products to be properly labelled and stored.

.4 Immediately inform Owner and Consultant if any unforeseen or peculiar safety-related factor, hazard, or condition becomes evident during performance of Work.

1.9 Fire Protection

.1 Provide and maintain safeguard and protection against fire in accordance with current fire codes and regulations.

.2 Provide temporary fire protection throughout the course of construction. Particular attention shall be paid to the elimination of fire hazards.

.3 Comply with the requirements of FCC No. 301 Standards for Construction Operations issued by the Fire Commissioner of Canada and the National Building Code.

.4 Provide and maintain portable fire extinguishers during construction, in accordance with Part 6 of the National Fire Code of Canada and NFPA 241 Standard for Safeguarding Construction, Alteration, and Demolition Operations, 2013 Edition

.5 Maintain unobstructed access for firefighting at all areas in accordance with the National Building Code of Canada.

1.10 Accident Reporting

.1 Investigate and report incidents and accidents as required by Occupational Safety and Health Act, and the Regulations made pursuant to the Act.

.2 For the purpose of this contract immediately investigate and provide a report to the Consultant on incidents and accidents that involve:
.1 A resulting injury that may or may not require medical aid but involves lost time at work by the injured person(s).
.2 Exposure to toxic chemicals or substances.
.3 Property damage.
.4 Interruption to adjacent and/or integral infrastructure operations with potential loss implications.

1.11 Records on Site

.1 Maintain on site a copy of the safety documentation as specified in this section and any other safety related reports and documents issued to or received from the authorities having jurisdiction.

.2 Upon request, make copies available to the Consultant.

PART 2 PRODUCTS

2.1 Not Used

.1 Not used

PART 3 EXECUTION

3.1 Not Used

.1 Not used

End of Section

PART 1 GENERAL

1.1 Section Includes

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

1.2 Submittals

.1 Make submittals in accordance with Section 01 33 00 – Submittal Procedures.

.2 Submit written request and obtain Consultant's approval in advance of cutting or alteration which affects:
.1 Structural integrity of any element of Project.
.2 Integrity of weather exposed or moisture resistant elements.
.3 Efficiency, maintenance, or safety of any operational element.
.4 Visual qualities of sight exposed elements

1.3 Materials

.1 Change in Materials: Submit request for substitution in accordance with Section 01 33 00 - Submittal Procedures.

.2 Requests for change in materials shall include documentation indicating conformance to project requirements and intent.

1.4 Definitions

.1 Cutting: Removal of in-place construction necessary to permit installation or performance of other work.

.2 Patching: Fitting and repair work required to restore construction to original conditions after installation of other work.

1.5 Preparation

.1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.

.2 After uncovering, inspect conditions affecting performance of Work.

.3 Beginning of cutting or patching means acceptance of existing conditions.

.4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.

.5 Provide protection from elements for areas which may be exposed by uncovering work..

1.6 Execution

.1 Execute cutting, fitting, and patching including excavation and fill, to complete Work.

.2 Fit several parts together, to integrate with other Work.

.3 Uncover Work to install ill-timed Work.

.4 Remove and replace defective and non-conforming Work.

.5 Provide cutting and patching of all openings in non-structural elements of Work as necessary to complete installation of mechanical and electrical Work. Include complete removal and replacement of such elements as necessary to provide construction access.

.6 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.

.7 Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.

.8 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools are not allowed on masonry work without prior approval.

.9 Restore work with new products in accordance with requirements of Contract Documents.

.10 Fit work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

.11 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.

PART 2 PRODUCTS

2.1 MATERIALS

.1 General: Comply with requirements specified in other Sections.

.2 In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

.3 If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Consultant for the visual and functional performance of in-place materials.

PART 3 EXECUTION

3.1 Cutting and Patching

.1 General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
  .1 Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

.2 Temporary Support: Provide temporary support of work to be cut.

.3 Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

.4 Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize interruption to occupied areas.

.5 Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
- .1 In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
- .2 Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
- .3 Proceed with patching after construction operations requiring cutting are complete.

.6 Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.
- .1 Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
- .2 Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.

.7 Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

End of Section

PART 1 GENERAL

1.1 Section Includes

.1 Progressive Cleaning
.2 Final Cleaning

1.2 Project Cleanliness

.1 Maintain Work in tidy condition, free from accumulation of waste products and debris.

.2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by the Owner. Do not burn waste materials on site.

.3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

.4 Provide on-site containers for collection of waste materials and debris.

.5 Provide and use clearly marked separate bins for recycling.

.6 Remove debris daily. The work site must be left clean and tidy upon completion, to the satisfaction of the Consultant.

.7 Store volatile waste in covered metal containers, and remove from premises at end of each working day.

.8 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.

.9 Schedule cleaning operations so that resulting dust, debris and other contaminants will not contaminate building systems.

PART 2 PRODUCTS

2.1 Products

.1 All cleaning materials and products shall be low VOC type. Submit list of cleaning products including MSDS for approval prior to commencement of cleaning operations.

.2 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

PART 3 EXECUTION

3.1 Final Cleaning

.1 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.

.2 Remove waste products and debris other than that caused by others and leave Work clean and suitable for occupancy.

.3 Prior to final review remove surplus products, tools, construction machinery and equipment.

.4 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, floors and ceilings.

.5 Pick up all nails, screws, and associated roof waste and debris from grounds around building minimum twice daily.

.6 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.

.7 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.

.8 Remove dirt and other disfiguration from exterior surfaces.

.9 Clean and sweep roofs. Clear all drains.

.10 Sweep and wash clean paved areas.

End of Section

PART 1 GENERAL

1.1 Section Includes

.1 References.
.2 Submittals.
.3 Definitions.
.4 Waste Management Goals for the Project.
.5 Documents.
.6 Waste Management Plan.
.7 Waste Reduction Work Plan.
.8 Materials Source Separation Program.
.9 Disposal of Wastes.
.10 Scheduling.
.11 Storage, Handling and Protection.
.12 Application.
.13 Diversion of Materials.

1.2 Related Sections

.1 Section 01 33 00 Submittal Procedures
.2 Section 01 74 11 Cleaning

1.3 References

.1 O. Reg. 102/94, Waste Audits and Waste Reduction Work Plans.

1.4 Submittals

.1 Make submittals in accordance with Section 01 33 00 – Submittal Procedures.

.2 Submit 2 copies of completed Waste Management Plan (WMP) including Waste Reduction Workplan (WRW) and Materials Source Separation Program description prior to project start-up.

1.5 Definitions

.1 Waste Management Plan (WMP): Contractor’s approved overall strategy for waste management including waste audit, waste reduction workplan and materials source separation program.

.2 Waste Audit (WA): Relates to projected waste generation. Involves measuring and estimating quantity and composition of waste, reasons for waste generation, and operational factors which contribute to waste.

.3 Waste Reduction Work Plan (WRW): Written report which addresses opportunities for reduction, reuse, or recycling of materials. WRW is based on information acquired from WA.

.4 Materials Source Separation Program (MSSP): Consists of a series of ongoing activities to separate reusable and recyclable waste material into material categories from other types of waste at point of generation.

.5 Waste Management Coordinator (WMC): Designate individual who is in attendance on-site, full-time. Designate, or have designated, individuals from each Subcontractor to be responsible for waste management related to their trade and for coordinating activities with WMC.

.6 Separate Condition: Refers to waste sorted into individual types.

1.6 Waste Management Goals for the Project

.1 The Owner has established that this Project shall generate the least amount of waste possible and that processes shall be employed that ensure the generation of as little waste as possible including prevention of damage due to mishandling, improper storage, contamination, inadequate protection or other factors as well as minimizing over packaging and poor quantity estimating.

.2 Of the inevitable waste that is generated, the waste materials designated in this specification shall be salvaged for reuse and or recycling. Waste disposal in landfills or incinerators shall be minimized. On new construction projects this means careful recycling of job site waste.

1.7 Waste Management Plan

.1 Waste Management Plan: Within 10 calendar days after receipt of Notice of Award of Contract, or prior to any waste removal, whichever occurs sooner, submit to the Owner and Consultant a Waste Management Plan. The Plan shall contain the following:
  .1 Analysis of the proposed job site waste to be generated, including the types of recyclable and waste materials generated (by volume or weight). In the case of demolition, a list of each item proposed to be salvaged during the course of the project should also be prepared
  .2 Alternatives to Land Filling: Contractor shall designate responsibility for preparing a list of each material proposed to be salvaged, reused, or recycled during the course of the Project.

.2 Post WMP or summary where workers at site are able to review its content.

1.8 Waste Reduction Work Plan

.1 Reduce construction and demolition waste in compliance with O. Reg. 102/94.

.2 Reduction will involve action to minimize quantity of waste at source. Reuse products which would become waste where practical. Recycling will involve collection and source separation at the site, of materials for use as feedstock in manufacturing of new products.

.3 Conform to local Municipal and Regional Landfill Solid waste management requirements. Consider reduction, reuse and recycling of waste generated during construction such as dimensional lumber, clean drywall, concrete, brick, scrap metal and corrugated cardboard.

1.9 Materials Source Separation Program

.1 The Waste Management Plan shall include a Source Separation Program for recyclable waste, and shall be in accordance with the established policies currently in place at the local Municipality, and the requirements of O. Reg. 102/94.

.2 Prepare MSSP and have ready for use prior to project start-up.

.3 Implement MSSP for waste generated on project in compliance with approved methods and as approved by Consultant.
.4 Provide on-site facilities for collection, handling, and storage of anticipated quantities of reusable and/or recyclable materials.

.5 Provide containers to deposit reusable and/or recyclable materials.

.6 Locate containers to facilitate deposit of materials without hindering daily operations.

.7 Locate separated materials in areas which minimize material damage.

.8 Collect, handle, store on-site, and transport off-site, salvaged materials in separate condition.

1.10 Disposal of Wastes

.1 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

.2 Provide appropriate on-site containers for collection of waste materials and debris.

.3 Provide and use clearly marked separate bins for recycling.

.4 Remove waste materials from site at regularly scheduled times or dispose of as directed by Consultant. Do not burn waste materials on site.

.5 Remove waste material and debris from site and deposit in waste container at end of each working day.

.6 Do not permit waste to accumulate onsite.

.7 Burying of rubbish and waste materials is prohibited.

.8 Disposal of waste into waterways, storm, or sanitary sewers is prohibited.

1.11 Scheduling

.1 Coordinate work with other activities at site to ensure timely and orderly progress of the Work.

1.12 Storage, Handling and Protection

.1 Store, materials to be reused, recycled and salvaged in locations as directed by Owner.

.2 Materials from building demolition to be salvaged or re-used are to be removed and salvaged.

.3 Unless specified otherwise, materials for removal become Contractor's property.

PART 2 PRODUCTS

2.1 Not Used

.1 Not used

PART 3 EXECUTION

3.1 Application

.1 Do work in compliance with Waste Management Plan.

.2 Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes.

.3 Source separate materials to be reused/recycled into specified sort areas.

3.2 Diversion of Materials

.1 Separate materials from general waste stream and stockpile in separate piles or containers, to approval of Owner, and consistent with applicable fire regulations. Mark containers or stockpile areas. Provide instruction on disposal practices.

.2 On-site sale of materials is not permitted.

End of Section

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PART 1 GENERAL

1.1 Section Includes

.1 Administrative procedures preceding preliminary and final inspections of Work.

1.2 Related Work

.1 Section 01 78 00 Closeout Submittals

1.3 References

.1 Canadian Construction Documents Committee CCDC 2-2020, Stipulated Price Contract including Supplementary Conditions.
.2 OAA/OGCA Document 100 - Recommended procedures regarding Substantial Performance of Construction Contracts and Completion Takeover of Projects.
.3 The Construction Lien Act.

1.4 Inspection and Declaration

.1 Contractor's Inspection: The Contractor and all Sub-contractors shall conduct an inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents. Submit duplicate copies of the deficiency list to the Owner and Consultant.
  .1 Notify Consultant in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.
  .2 Request Consultant's review.
.2 Consultant's Review: Consultant and Contractor will perform review of Work to identify obvious defects or deficiencies. Contractor shall correct Work accordingly.
.3 Completion: submit written certificate that following have been performed:
  .1 Work has been completed and inspected for compliance with Contract Documents.
  .2 Defects have been corrected and deficiencies have been completed.
  .3 Work is complete and ready for Final Review by the Consultant.
.4 Final Inspection: when items noted above are completed, request final review of Work by Consultant, and Contractor. If Work is deemed incomplete by the Consultant, complete outstanding items and request re-review.
.5 Declaration of Substantial Performance: when Consultant consider deficiencies and defects have been corrected and it appears requirements of Contract have been substantially performed, make application for certificate of Substantial Performance. Refer to CCDC 2, General Conditions Article GC 5.4 - Substantial Performance of Work and the Construction Lien Act for specifics to application.
.6 Commencement of Lien and Warranty Periods: date of Owner's acceptance of submitted declaration of Substantial Performance shall be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work.
.7 Final Payment: When Consultant considers final deficiencies and defects have been corrected and it appears requirements of Contract have been totally performed, make application for final payment. Refer to CCDC 2, General Conditions Article GC 5.7 for specifics to application.
.8 Payment of Holdback: After issuance of certificate of Substantial Performance of Work, submit an application for payment of holdback amount in accordance with CCDC 2, General Conditions Article 5.5

PART 2 PRODUCTS

2.1 Not Used

.1 Not used

PART 3 EXECUTION

3.1 Not Used

.1 Not used

End of Section

.

PART 1 GENERAL

1.1 Section Includes

.1 As built, samples, and specifications.
.2 Equipment and systems.
.3 Product data, materials and finishes, and related information.
.4 Operation and maintenance data.
.5 Warranties and bonds.

1.2 Submittals

.1 Make submittals in accordance with Section 01 33 00 – Submittal Procedures.

1.3 Submission

.1 Prepare instructions and data using personnel experienced in maintenance and operation of described products.

.2 At least 2 weeks prior to Substantial Performance, submit 2 copies of the DRAFT Operating and Maintenance Manuals, for Consultants review. After review, the Consultant will return to the Contractor 1 DRAFT copy, with review comments, for revision. Submit 1 copy of the revised Operating and Maintenance for approval prior to the production of FINAL copies. Prior to the Issuance of the Final Certificate of Completion, and within 10 working days after Substantial Performance, submit 2 copies of the FINAL Operating and Maintenance Manuals.

.3 Building will not be deemed ready for use unless the draft copies of the Operating and Maintenance Manuals and the "As-built" Record Documents have been submitted and reviewed by the Consultant.

.4 Building will not be deemed ready for use unless the completed and submitted Operating and Maintenance Manuals and "As-built" Record Documents have been accepted by the Consultant.

1.4 Format

.1 Organize data in the form as instructional manual via Digital format in addition to physical Binders.

.2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.

.3 When multiple binders are used correlate data into related consistent groupings. Identify contents of each binder on spine.

.4 Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.

.5 Arrange content by Section numbers and sequence of Table of Contents.

.6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.

.7 Text: manufacturer's printed data, or typewritten data.

.8 Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

.9 Provide 1:1 scaled CAD files in .dwg format.

1.5 Contents Each Volume

.1 Table of Contents: provide title of project;
  .1 Date of submission; names.
  .2 Addresses, and telephone numbers of Consultant and Contractor with name of responsible parties.
  .3 Schedule of products and systems, indexed to content of volume.

.2 .For each product or system:
  .1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.

.3 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.

.4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.

.5 Typewritten Text: as required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control

1.6 Occupant Manual

.1 Submit Occupant Manual to Consultant’s requirements.

.2 Occupant Manual to include:
  .1 General building information.
  .2 Safety.
  .3 Environmental considerations.
  .4 Communications.
  .5 Contact List.
  .6 Other/Miscellaneous.

1.7 As Builts and Samples

.1 In addition to requirements in General Conditions, maintain at the site for Consultant one record copy of:
  .1 Contract Drawings.
  .2 Specifications.
  .3 Addenda.
  .4 Change Orders and other modifications to Contract.
  .5 Reviewed shop drawings, product data, and samples.
  .6 Field test records.
  .7 Inspection certificates.
  .8 Manufacturer's certificates.

.2 Store record documents and samples in field office apart from documents used for construction. Provide files, racks, and secure storage.

.3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual. Label each document "PROJECT RECORD" in neat, large, printed letters.

.4 Maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.

.5 Keep record documents and samples available for inspection by Consultant.

1.8 Recording Actual Site Conditions

.1 Record information on set of drawings, provided by Consultant.

.2 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.

.3 Contract Drawings and shop drawings: mark each item to record actual construction, including:
- .1 Measured depths of elements of foundation in relation to finish first floor datum.
- .2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
- .3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
- .4 Field changes of dimension and detail.
- .5 Changes made by change orders.
- .6 Details not on original Contract Drawings.
- .7 References to related shop drawings and modifications.

.4 Submit following drawings:
- .1 Record changes in red. Mark on one set of prints and at completion of project prior to final inspection, produce electronic “as-built” records on disk using latest version of AutoCad. Annotate “AS-BUILT RECORD” in each drawing title block.
- .2 All changes shall be shown on a separate drawing layer named "as-built".
- .3 At least 2 weeks prior to commencement of scheduled commissioning activities, submit one copy of the DRAFT “As-built” Project Record Documents for Consultants review and use during the commissioning activities. After the completion of the commissioning activities, the Consultant will return to the Contractor the DRAFT copy, with review comments, for revision. Prior to the Issuance of the Final Certificate of Completion, and within 10 working days after Substantial Performance, submit 2 copies of the FINAL “As-built” Project Record Documents and disk of “as-built” record drawings.

.5 Specifications: legibly mark each item to record actual construction, including:
- .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
- .2 Changes made by Addenda and change orders.

.6 Other Documents: maintain manufacturer's certifications, inspection certifications, field test records, required by individual specifications sections

1.9 Equipment and Systems

.1 Each Item of Equipment and Each System: include description of unit or system, and component parts. Give function, normal operation characteristics, and limiting conditions. Include performance curves, with Engineering data and tests, and complete nomenclature and commercial number of replaceable parts.

.2 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

.3 Additional requirements: as specified in individual specification sections.

1.10 Materials and Finishes

.1 Building Products, Applied Materials, and Finishes: include product data, with catalogue number, size, composition, and colour and texture designations.

.2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

.3 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.

.4 Additional Requirements: as specified in individual specifications sections.

1.11 Warranties and Guarantees

.1 Separate each warranty or guarantee with index tab sheets keyed to Table of Contents listing.

.2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

.3 Obtain warranties and guarantees, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of the applicable item of work.

.4 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial Performance is determined.

.5 Verify that documents are in proper form, contain full information, and are notarized.

.6 Co-execute submittals when required.

.7 Retain warranties and guarantees until time specified for submittal.

PART 2 PRODUCTS

2.1 Not Used

.1 Not used

PART 3 EXECUTION

3.1 Not Used

.1 Not used

End of Section

PART 1 GENERAL

1.1 General

.1 Conform to the requirements of Division 1.

1.2 References

.1 The National Building Code of Canada, Part 8, Safety Measures on Construction and Demolition Sites.
.2 CSA Group (CSA)
  .1 CSA S350-M1980 (R2003), Code of Practice for Safety in Demolition of Structures
.3 Ontario Regulation 102/94, Waste Audits and Waste Reduction Work Plans.
.4 Ontario Regulation 103/94.Environmental Protection Act.
.5 Ontario Regulation 213/07 The Fire Code.
.6 Ontario Regulation 232/98 Landfilling Sites.
.7 Ontario Regulation 278/05 Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations.
.8 Ontario Regulation 347 Environmental Protection Act, General - Waste Management.
.9 Ontario Regulation 521/03 The Gasoline Handling Act.
.10 The Workplace Health and Safety Act, and Regulations for Construction Projects.
.11 The Gasoline Handling Act, and the Gasoline Handling Code.
.12 The Contractors Health and Safety Policy.
.13 Laws, rules and regulations of other authorities having jurisdiction.

1.3 Submittals

.1 Submit schedule of demolition activities indicating the following:
  .1 Detailed sequence of demolition and removal work, including start and end dates for each activity.
  .2 Dates for shutoff, capping, and continuation of utility services.
  .3 If hazardous materials are encountered and disposed of, landfill records indicating receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

.2 Submit the following plans:
  .1 Fire safety plan.
  .2 Hoarding plans.

.3 Submit proposed dust-control measures.

.4 Submit proposed noise-control measures.

.5 Where required by authorities having jurisdiction, submit for approval drawings, diagrams or details clearly showing sequence of disassembly work.

.6 Submit proof that all personnel involved in the removal and handling of hazardous material are trained and certified in the safe removal and handling of such materials.

.7 At Project Closeout: Submit record drawings and identify and accurately locate capped utilities and other architectural, structural, electrical, or mechanical conditions.

1.4 Permits

.1 Obtain and pay for all other permits and comply with all laws, rules, ordinances, and regulations relating to public health and safety, demolition and hoarding.

1.5 Services

.1 Be aware of all services that affect the work.

.2 Arrange for disconnection of public utilities with the respective utility company or municipal department as required to complete the work.

.3 Make service disconnects as required.

.4 Coordinate work in the vicinity of overhead power lines with the local Power Authority and in accordance with Ministry of Labour requirements.

1.6 Work Included

.1 Temporary disconnection and shutdown of all roof mounted mechanical units as required to complete the work in coordination with the owner.

.2 Removal and disposal of entirety of roof materials. Removals to include but not be limited to, all roofing components from deck up and as detailed on drawings.

1.7 Definitions

.1 Chemical Waste: Includes petroleum products, bituminous materials, salts, acids, alkalis, herbicides, pesticides, organic chemicals and inorganic wastes.

.2 Demolition Waste: Building materials and solid waste resulting from construction, remodeling, repair, cleanup, or demolition operations that are not hazardous.

.3 Environmental Pollution and Damage: The presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human or animal life; affect other species of importance to humanity; or degrade the utility of the environment for aesthetic, cultural or historical purposes.

.4 Inert Fill: A permitted facility that accepts inert waste such as asphalt and concrete exclusively for the purpose of disposal.

.5 Inert Solids/Inert Waste: Non-liquid solid waste including, but not limited to, soil and concrete that does not contain hazardous substances or soluble pollutants at concentrations in excess of water-quality standards established by a regional water board and does not contain significant quantities of decomposable solid waste.

.6 Landfill: A landfill that accepts non-hazardous materials such as household, commercial, and industrial waste, resulting from construction, remodeling, repair, and demolition operations. A landfill must have a solid waste facilities permit from the Ministry of the Environment and be in conformance to O.Reg 232/98.

.7 Recycling: The process of sorting, cleansing, treating and reconstituting materials for the purpose of using the altered form in the manufacture of a new product. Recycling does not include burning, incinerating or thermally destroying solid waste.

.8 Remove: Remove and legally dispose of items, except those identified for use in recycling, re-use, and salvage programs.

.9 Reuse: The use, in the same or similar form as it was produced, of a material which might otherwise be discarded.

.10 Solid Waste: All putrescible and nonputrescible solid, semisolid, and liquid wastes, including garbage, trash, refuse, paper, rubbish, ashes, industrial wastes, demolition and construction wastes, abandoned vehicles and parts thereof, discarded home and industrial appliances, dewatered, treated, or chemically fixed sewage sludge which is not hazardous waste, manure, vegetable or animal solid and semisolid wastes, and other discarded solid and semisolid wastes. "Solid waste" does not include hazardous waste, radioactive waste, or medical waste as defined or regulated by law.

1.8 Quality Assurance

.1 Abatement Contractors: Only abatement contractors licensed in the province of Ontario and approved by the Owner are permitted to undertake designated substances abatement and removal.

.2 Regulatory Requirements: Comply with governing regulations before starting demolition. Comply with hauling and disposal regulations of authorities having jurisdiction. Obtain and pay for all permits required.

.3 Project Review:
.1 Review schedule and scheduling procedures.
.2 Review health and safety procedures.
.3 Review of Designated Substances and Hazardous Materials Survey
.4 Review of Project conditions including review of record photographs.

1.9 Temporary Ventilation

.1 Provide all required temporary ventilation for demolition work. Provide the use of Hepa filters to ensure air quality.

1.10 Shoring and Bracing

.1 Provide all shoring and bracing required for the execution of the work.

1.11 Project Site Conditions

.1 The Owner assumes no responsibility for the actual condition of the structures.

.2 Construct safety barriers, barricades, fencing and hoarding to separate public from work areas.

PART 2 PRODUCTS

2.1 Materials

.1 All building materials removed from the building shall become the property of the Contractor unless specified otherwise and shall be removed from the Site.

.2 Conform to requirements of the General Conditions and Division 1, General Requirements, in particular, articles on Design and Safety Requirements for Temporary Work. Provide materials necessary for temporary shoring. On completion, remove temporary materials from site.

.3 Recycling:
- .1 All materials from demolition which can be recycled through local municipal programs and which are not scheduled for salvage shall be sorted and separated in accordance with Regional, Provincial and Municipal standards and regulations.
- .2 Documentation must be kept of all recycled material in order to fill out waste reduction progress reports.
- .3 Recycle paper and beverage containers used by onsite workers. Provide recycling receptacles for the duration of construction activities at the building site.
- .4 Items of salvageable value to the Contractor may be removed from the structure as the work progresses.

2.2 Designated Substances

.1 Refer to Designated Substances and Hazardous Materials Survey,

.2 Provide and maintain all required temporary construction facilities and enclosures as required during removal of designated substances.

PART 3 EXECUTION

3.1 Phasing

.1 Schedule and sequence work in coordination with the owner.

3.2 Examination

.1 Before commencing demolition operations, examine Site and when requested, provide engineering survey to determine type of construction, condition of structure, and site conditions. Assess strength and stability of damaged or deteriorated structures.

.2 Prior to roof removals be aware of:
- .1 General condition of existing building elements, ie parapets, roof decks, support beams, columns and trusses
- .2 Overloading roof with existing roof ballast

.3 Contact authorities or utility companies for assistance in locating and marking services which may affect demolition. Such services can include:
- .1 electrical power lines
- .2 gas mains
- .3 communication cables
- .4 water mains and fire mains

.5 drainage piping

3.3 Protection

.1 Refer to designated substances reports including recommendations for the control of dust. Submit to the Owner and Consultant, work plans including plans for the control of airborne dust containing possible mold spores, and hazardous substances. Ensure that all necessary controls are in place at the beginning of each work period which will prevent to spread of contaminated material beyond the work area limits. Stop work immediately if there exists any possibility of the spread of contaminated materials.

.2 Provide flagmen where necessary or appropriate, to provide effective and safe access to Site to vehicular traffic.

.3 Ensure scaffolds, ladders, equipment and other such equipment are not accessible to public. Protect with adequate fencing or remove and dismantle at end of each day or when no longer required.

.4 Provide enclosed chutes for disposal of debris from heights more than 1 storey in accordance with CSA S350.

.5 Provide protection around floor and/or roof openings.

.6 Do not interfere with use and activities of adjacent buildings and site. Maintain free and safe passage to and from buildings.

.7 At all times protect the structure from overloading.

.8 Protect existing adjacent work against damages which might occur from falling debris or other causes due to work of this Section.

.9 Where demolition operations prevent normal access to adjacent properties, provide and maintain suitable alternative access.

3.4 Environmental Controls

.1 Comply with provincial and municipal regulations pertaining to water, air, solid waste, recycling, chemical waste, sanitary waste, sediment and noise pollution.

.2 Dust Control, Air Pollution, and Odour Control: Prevent creation of dust, air pollution and odors.
  .1 Use temporary enclosures and other appropriate methods to limit dust and dirt rising and scattering in air to lowest practical level.
  .2 Store volatile liquids, including fuels and solvents, in closed containers.
  .3 Properly maintain equipment to reduce gaseous pollutant emissions.

.3 Noise Control: Perform demolition operations to minimize noise.
  .1 Repetitive, high level impact noise will be permitted only between the hours of 8:00 a.m. and 6:00 p. m.

Repetitive impact noise on the property shall not exceed the following dB limitations:

Sound Level in dB	Time Duration of Impact Noise
60 db	More than 12 minutes in any hour
70 dB	More than 3 minutes in any hour

.2 Provide equipment, sound deadening devices, and take noise abatement measures that are necessary to comply with the requirements of this Contract and with municipal regulations.

.4 Salvage, Re-Use, and Recycling Procedures:
- .1 Identify re-use, salvage, and recycling facilities.
- .2 Develop and implement procedures to re-use, salvage, and recycle demolition materials, based on the Contract Documents, the Contractor's Waste Management and Recycling Plan, estimated quantities of available materials, and availability of recycling facilities. Procedures may include on-site recycling, source-separated recycling, salvage, and/or mixed debris recycling efforts.
- .3 Identify materials that are feasible for salvage, determine requirements for site storage, and transportation of materials to a salvage facility.
- .4 Source-separate clean and uncontaminated demolition materials including, but not limited to the following types:
  - .1 Rigid Foam
  - .2 Glass
  - .3 Plastics
  - .4 Insulation
  - .5 Gypsum Board
  - .6 Metal (ferrous and non-ferrous)
  - .7 Wood, Clean Dimensional Wood, Pallet Wood
  - .8 Sheet Wood: Plywood, Oriented Strand Board (OSB), Particle Board
  - .9 Beverage Containers
  - .10 Paper: Bond, Newsprint, Cardboard, Paper, Packaging Materials
  - .11 Other materials as appropriate.
- .5 Develop and implement a program to transport loads of mixed demolition materials that cannot be feasibly source separated to a mixed materials recycling facility.

3.5 Performance

.1 Ensure demolition work is supervised by competent foreman at all times.

.2 Demolition of all roofing materials, sloped, and flat shall proceed safely in systematic manner, as specified herein, and as necessary to accommodate remedial work indicated.

.3 At end of each day's work, leave work in safe condition watertight. Ensure all security is fully operational.

.4 Ensure continuation of all services to building. Coordinate any interruption of service with owner.

.5 Keep work wetted down to minimize dust.

.6 Maintain all life safety systems.

.7 Protect from weather, parts of structure not previously exposed.

3.6 Demolition and Removals

.1 Maintain the work areas and storage areas clean and orderly at all times and free of rubbish and debris.

.2 Particular attention shall be paid to prevention of fire and elimination of fire hazards.

.3 Review demolition procedures daily to ensure no personnel or equipment are located or working without additional safe working platforms or working surface adequate to support the operations.

.4 All damage caused to the existing building interior and/or equipment, etc by the neglect of the Contractor or any of his forces shall be made good at the expense of the Contractor including all costs and charges which may be claimed by the Owner for damages or loss of production suffered.

.5 The following methods of demolition will not be permitted:
.1 Use of explosives.

.6 Existing roof is single ply epdm. Remove all roofing in a safe manner not overloading the structure.

.7 At end of each day's work, leave work in safe condition.

.8 Demolish in a manner to minimize dusting. Keep dusty materials wetted at all times.

.9 Upon completion of work, remove debris, trim surfaces and leave work site clean.

.10 Use methods required to complete the work within limitations of governing regulations.

.11 Damages: Promptly repair damages to facilities caused by demolition operations

.12 Be responsible for maintaining the existing building in watertight condition at all times. Remove only as much roofing as can be replaced in one day.

.13 Removal of items indicated on the drawings shall mean all adhesives, fasteners, anchors, appurtenances, and the like as necessary to prepare substrates for the installation of new construction, finishes and equipment.

.14 Remove and dispose of roofing, underlayments, roof insulation, vapour retarders, flashing, trim and accessories for extent indicated. Dispose of all materials off site, in approved landfill sites and in accordance with local regulations for waste disposal.

.15 Remove all existing metal parapet flashings and counter flashings.

.16 Refer to Section 07 52 00 for temporary removal of existing roof equipment. Ensure all work is protected during demolition of roofing systems.

3.7 Hazardous Materials

.1 Safely remove and dispose of identified substances in accordance with all applicable legislation. Utilize licensed and qualified personnel and sub-trades to execute this work.

.2 Provide backup documentation as necessary to verify disposal sites for any designated substances removed from the site.

3.8 Handling of Demolished Materials

.1 Do not allow demolished materials to accumulate or be stored on-site for more than 5 days.

.2 Do not burn, bury or otherwise dispose of rubbish and waste materials on project site.

.3 Disposal: Transport demolished materials off Owner's property and legally reuse, salvage, recycle, or dispose of materials.

.4 Legally transport and dispose of materials that cannot be delivered to a source separated or mixed recycling facility to a transfer station or disposal facility that can legally accept the materials for the purpose of disposal.

.5 Become familiar with the conditions for acceptance of new construction, excavation and demolition materials at recycling facilities prior to delivering materials.

.6 Use a permitted waste hauler or Contractor's trucking services and personnel.

.7 Deliver to facilities that can legally accept new construction, excavation and demolition materials for purpose of re-use, recycling, composting, or disposal.

.8 Remove and transport materials from demolition in a manner that will prevent spillage on adjacent surfaces, streets, and areas or dust being emitted into the atmosphere.

.9 Revenues or other savings obtained from recycled, re-used, or salvaged materials shall accrue to Contractor unless otherwise noted.

3.9 Deck Repairs

.1 Steel Deck: Areas of steel deck found to be, damaged, missing, or otherwise failing, are to be replaced at the direction of the consultant. Inform the consultant when steel deck conditions are found to be doubtful.

3.10 Cleaning

.1 Upon completion of demolition work, clean existing building where affected by demolition.

.2 Remove all hoarding and clean adjacent landscape, and parking areas of dust, dirt and materials caused by demolition operations.

.3 Reinstate areas and existing works outside areas of demolition to conditions that existed prior to commencement of work.

.4 Upon completion of demolition work, remove equipment and debris and leave work site clean.

End of Section

PART 1 GENERAL

1.1 General

.1 Conform to the requirements of Division 1.

1.2 Related Sections

.1 Section 07 52 00 Modified bituminous Roofing
.2 Section 07 62 00 Sheet Metal Flashing and Trim

1.3 References

.1 Canadian Standards Association (CSA)
  .1 CSA-080-M Wood Preservation
  .2 CSA-080.1 Preservative Treatment of all Timber Products by Pressure Processes.
  .3 CSA 080.9 Preservative Treatment of Plywood by Pressure Processes.
  .4 CSA 0121-M Douglas Fir Plywood.
  .5 CSA 0141 Softwood Lumber.
  .6 CSA B111 Wire Nails, Spikes and Staples.
  .7 CSA G164 Hot Dip Galvanizing of Irregularly Shaped Articles.
.2 Underwriters Laboratories Canada (ULC)
  .1 CAN/ULC-S102 Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
.3 National Lumber Grading Authority (NGLA)
  .1 Standard Grading Rules for Canadian Lumber, Latest Edition.

1.4 Quality Assurance

.1 Sawn lumber shall be identified by the grade stamp of an association or independent grading agency certified by the Canadian Lumber Standards Accreditation Board.

1.5 Shipping, Handling and Storage

.1 Materials shall not be delivered before they are required for proper conduct of the work.

.2 Protect materials, under cover, both in transit and on the site.

.3 Store materials to prevent deterioration or the loss or impairment of their structural and other essential properties. Do not store materials in areas subject to high humidity.

.4 Protect work from damage during storage, handling, installation and until the building is turned over to the Owner. Make good damage and loss without additional expense to the Owner.

.5 Store sheathing materials level and flat, in a dry location. Protect panel edges from moisture at all times.

PART 2 PRODUCTS

2.1 Materials

.1 Timber Material shall be 'Grade Stamped'.

.2 Construction Lumber: To CAN/CSA 0141 Softwood Lumber graded to NLGA Standard Grading Rules for Canadian Lumber, published by the National Lumber Grades Authority. All lumber shall bear grade stamps. Moisture content of softwood lumber not to exceed 19% at time of installation.
.1 Framing lumber, plates, furring, blocking, No. 1 SPF.

.3 Douglas Fir Plywood: To CSA 0121-M, standard construction, good one side, thickness as shown on the drawings.

.4 Nails, Spikes and Staples: To CSA B111.

.5 Bolts: 12.5 mm diameter, galvanized, complete with nuts and washers.

.6 Proprietary Fasteners: toggle bolts, expansion shields and lag bolts, screws and lead or inorganic fibre plugs, recommended for purpose by manufacturer.

.7 Nailing Discs: flat caps, minimum 25 mm diameter, minimum 26 gauge thick, sheet metal, formed to prevent dishing.

.8 Galvanizing: To CAN/CSA-G164.

.9 Sealant: 'Mono' as manufactured by Tremco Manufacturing Ltd. or equivalent by Dow-Corning.

.10 Wood Preservative to CAN/CSA-080-M.

.11 Galvanizing: to CAN/CSA-G164. Use galvanized fasteners, and hardware for exterior work, preservative treated lumber, and materials in contact with concrete or masonry.

PART 3 EXECUTION

3.1 Installation

.1 Workmanship:
.1 Execute work using skilled mechanics according to best practice, as specified here.
.2 Lay out work carefully and to accommodate work of other trades. Accurately cut and fit; erect in proper position true to dimensions; align, level, square, plumb, adequately brace, and secure permanently in place. Join work only over solid backing.

.2 Rough Hardware:
.1 Work shall include rough hardware such as nails, bolts, nuts, washers, screws, clips, hangers, connectors, strap iron, and operating hardware for temporary enclosures.

.3 Roof Blocking, Curbs and Copings
.1 Provide and install framing, blocking, curbs and copings as indicated on the drawings. Anchor blocking securely in permanent manner.
.2 Provide 10 mm Douglas Fir plywood copings on all built-up wood copings and curbs.
.3 Repair any damaged or rotted wood curbs.
.4 All curbs shall be filled with fibrous insulation.
.5 Inspect existing wood roof curbs and copings and replace all rotted or damaged material.
.6 Supply anchor bolts to mason for embedding into masonry walls as indicated.

.4 Surface Applied Wood Preservative

.1 Treat surfaces of material with wood preservative before installation. Apply preservative after materials have been cut and fit to size. To cut end two coats of preservative shall be applied.

.2 Apply preservative by dipping, or by brush or spray to completely saturate and maintain wet film on surface for minimum 3 minute soak on lumber and one minute soak on plywood.

.3 Retreat surfaces exposed by cutting, trimming, or boring with 2 coats of brush application of preservative before installation.

.4 All wood in contact with masonry or concrete shall be dipped in a tank of preservative for two minutes after fabrication.

.5 Provide treated wood nailers, blocking, cants, grounds and similar members where shown and where required for screeding or attachment of other work and surface applied items. Attach to substrate as required to support applied loading.

End of Section

PART 1 GENERAL

1.1 General

.1 Conform to the requirements of Division 1.

1.2 Related Sections

.1 Section 07 62 00 Sheet Metal Flashing and Trim
.2 Section 07 92 00 Joint Sealants
.3 Section 09 21 16 Gypsum Board

1.3 References

.1 The National Building Code of Canada.
.2 ASTM International, (ASTM)
  .1 ASTM D412-06 ae2, Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers – Tension.
  .2 ASTM D4541-09e1, Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers.
  .3 ASTM E96/E96M-15 Standard Test Methods for Water Vapor Transmission of Materials
  .4 ASTM E1186-03 (2009), Standard Practices for Air Leakage Site Detection in Building Envelope and Air Retarder Systems.
  .5 ASTM E2178-13 Standard Test Method for Air Permeance of Building Materials
  .6 ASTM E2357-11 Standard Test Method for Determining Air Leakage of Air Barrier Assemblies
  .7 ASTM D624-00 (2012) Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers.
  .8 ASTM D4541-09e1 Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers
.3 Canadian General Specifications Board (CGSB)
  .1 CGSB 37-GP-56M, Membrane, Modified, Bituminous, Prefabricated and Reinforced for Roofing.
.4 National Air Barrier Association (NABA)
  .1 National Air Barrier Association's (NABA) Quality Assurance Program (QAP)

1.4 Submittals

.1 Make submittals in accordance with Section 01 33 00 – Submittal Procedures.

.2 Submit manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Submit WHMIS MSDS - Material Safety Data Sheets.

.4 Submit manufacturer’s complete set of standard details for air barriers.

.5 Quality Assurance Submittals: submit following in accordance with Section 01 45 00 - Quality Control.
  .1 Manufacturer's Instructions: submit manufacturer's installation instructions and special handling criteria, installation sequence, cleaning procedures.

1.5 Performance Requirements

.1 Provide continuity of air/vapour barrier materials and assemblies in conjunction with materials described in other Sections.

1.6 Sequencing

.1 Sequence work to permit installation of materials in conjunction with related materials and seals.

1.7 Shipping, Handling and Storage

.1 Refer to Section 01 61 00 – Common Product Requirements.

.2 Deliver, handle and store materials in accordance with manufacturer's printed instructions.

1.8 Waste Management and Disposal

.1 Refer to Section 01 74 19 – Construction Waste Management and Disposal.

1.9 Warranty

.1 Warrant the work of this Section against defects of workmanship and material, for a period of two (2) years from the date of Substantial Performance and agree to make good promptly any defects which occur or become apparent within the warranty period.

PART 2 PRODUCTS

2.1 Materials

.1 Materials: as required to achieve specified performance criteria; meeting specified reference standards and functionally compatible with adjacent materials and components.

.2 Air/vapour barrier membrane components and accessories must be obtained as a single-source from the membrane manufacturer to ensure total system compatibility and integrity.

2.2 Membranes

.1 Self-adhered air/vapour barrier transition membrane shall SBS modified bitumen, self-adhering sheet membrane complete with a cross-laminated polyethylene film, and having the following physical properties:
  .1 Thickness: 1.0 mm (40 mils) min.
  .2 Air leakage: <0.01 L/s.m² @ 75 Pa to ASTM E283-91,
  .3 Vapour permeance: 1.6 ng/Pa.m².s (0.03 perms) to ASTM E96,
  .4 Low temperature flexibility: -30 degrees C to CGSB 37-GP-56M,
  .5 Elongation: 200% to ASTM D412-modifed.

.2 Acceptable Products:
  .1 Blueskin SA by Monsey-Bakor Inc.
  .2 Perm-A-Barrier by W.R. Grace & Co.
  .3 Air Shield by W.R. Meadows
  .4 ExoAir 110 by Tremco
  .5 DELTA-VENT SA by Cosella-Dörken

.6 Sopraseal Stick 1100T by Soprema

2.3 Adhesive and Primers

.1 As recommended by manufacturer.

2.4 Mastics & Termination Sealants

.1 As recommended by manufacturer.

PART 3 EXECUTION

3.1 Manufacturer's Instructions

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 General

.1 Perform Work in accordance with National Air Barrier Association - Professional Contractor Quality Assurance Program and requirements for materials and installation.

3.3 Examination

.1 Examine all surfaces to ensure conformance to the manufacturer's recommended surface conditions.

3.4 Preparation

.1 Prepare substrate surfaces in accordance with air barrier material manufacturer's instructions.

.2 All surfaces which are to receive flexible air barrier must be smooth, clean, dry, frost-free and in sound condition. All moisture, frost, grease, oils, loose mortar, dust, or other foreign materials which may impede the adhesion of the air barrier must be removed.

.3 Remove any and all sharp protrusions and repair any defects such as spalled or loose aggregate areas.

.4 Do not proceed with air barrier application until all substrate defects are repaired.

3.5 Installation

.1 Install air/vapour barrier materials in accordance with manufacturer's instructions.

.2 Prime surfaces and apply membrane in strict accordance with manufacturer's printed directions.

.3 Primed surfaces not covered by air barrier membrane during the same working day must be reprimed.

.4 Apply membrane by heating the surface in contact with the substrate with a trigger-activated propane torch, type as recommended by the manufacturer.

.5 Cut sheet membrane into manageable sizes, position membrane for alignment prior to removing protective film.

.6 Install membrane horizontally, in a shingle fashion starting at lowest point. Position membrane and remove protective film and press firmly into place. Ensure minimum 50 mm overlap at all end and side laps. Promptly roll the membrane surface and all laps with a counter top roller to ensure proper surface bond and effect the seal.

.7 Tie-in to, roofing systems, metal wall cladding, and at the interface of dissimilar materials as indicated or as necessary to achieve a continuous air seal throughout the building envelope. Seal with air barrier tape. Refer to manufacturer's standard details.

.8 Ensure all projections including wall ties, are properly sealed with a trowel or caulk application of specified sealant.

3.6 Inspection and Repair

.1 Inspect membrane thoroughly before covering and make any corrections to punctures, tears, voids and other obvious defects which would impede the membrane from performing as intended.

.2 Notify Consultant when sections of work are complete so as to allow for review prior to installation of metal cladding. Remove, replace or repair materials not satisfactory to the Consultant and wait for re-inspection before covering work.

3.7 Cleaning and Protection

.1 Proceed in accordance with Section 01 74 11 – Cleaning.

.2 Protect air barrier materials from damage during installation and the remainder of the construction period, according to material manufacturer's written instructions.

.3 Coordinate with installation of materials which cover the air barrier assemblies, to ensure exposure period does not exceed that recommended by the material manufacturer.

.4 Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction and acceptable to the primary material manufacturer.

.5 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

End of Section

PART 1 GENERAL

1.1 General

.1 Conform to the requirements of Division 1.

1.2 References

.1 ASTM International (ASTM)
- .1 ASTM C209-15 Standard Test Methods for Cellulosic Fiber Insulating Board
- .2 ASTM C518-17 Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
- .3 ASTM C1289-15 Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board
- .4 ASTM C1396/C1396M-14a Standard Specification for Gypsum Board
- .5 ASTM D41/D41M-11(2016) Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing
- .6 ASTM D312/D312M-15 Standard Specification for Asphalt Used in Roofing
- .7 ASTM D1187/D1187M-97(2018) Standard Specification for Asphalt-Base Emulsions for Use as Protective Coatings for Metal
- .8 ASTM D4586/D4586M-07(2018) Standard Specification for Asphalt Roof Cement, Asbestos-Free
- .9 ASTM D5147/D5147M-14 Standard Test Methods for Sampling and Testing Modified Bituminous Sheet Material
- .10 ASTM D6162/D6162M-00A(2015)e1 Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcements
- .11 ASTM D6163/D6163M-00(2015) e1 Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements
- .12 ASTM E96/E96M-16 Standard Test Methods for Water Vapor Transmission of Materials
- .13 ASTM E108-11 Standard Test Methods for Fire Tests of Roof Coverings
- .14 ASTM E2357-18 Standard Test Method for Determining Air Leakage Rate of Air Barrier Assemblies

.2 Health Canada/Workplace Hazardous Materials Information System (WHMIS) .1 Safety Data Sheets (SDS).

.3 Underwriters Laboratories of Canada (ULC)
- .1 ULC 102-18 Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
- .2 ULC 107-10 Methods of Fire Tests of Roof Coverings
- .3 ULC 704-11 Standard for Thermal Insulation, Polyurethane and Polyisocyanurate, Boards, Faced

.4 Canadian General Services Board (CGSB)
- .1 CGSB 37-GP-9Ma Primer, Asphalt, Unfilled, for Asphalt Roofing, Dampproofing and
- .2 CAN/CGSB 51.33-M Vapour Barrier, Sheet, Excluding Polyethylene, for Use in Building Construction.

Canadian Roofing Contractors Association (CRCA) Metric Specification Manual.

1.3 Submittals

.1 Make submittals in accordance with Section 01 33 00 – Submittal Procedures.

.2 Submit manufacturer’s product data to describe:

.3 Product Data: Roofing-system manufacturer's literature, including written instructions for evaluating, preparing, and treating substrate; technical data including tested physical and performance properties; and application instructions.
  .1 Provide for membrane and base flashing materials, and roofing cement, asphalt, primer, mastic sealant, and fasteners.
  .2 Include temperature ranges for storage and application of materials, and special cold weather application requirements or limitations.

.4 Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other work. Include manufacturer's reviewed and approved details that are project specific. Manufacturer's generic details will not be accepted.
  .1 Base flashings and membrane terminations.
  .2 Tapered insulation layout including, crickets, saddles, and tapered edge strips, including amount and direction of slopes.
  .3 Dimensions and locations of all roof field, perimeter, and corners areas.
  .4 Base sheet/Insulation fastening patterns for corner, perimeter, and field-of roof locations.
  .5 Walkway pad plan and detail
  .6 Proposed temporary, watertight, tie-off details for each substrate type.
  .7 Interface with sheet metal components (per Section 07 62 00), including but not limited to:
    .1 Counterflashing
    .2 Stack flashing assemblies
    .3 Edge and fascia sections
    .4 Interface with coping cap assemblies.
    .5 Interface with roofing accessories including but not limited to:
    .6 Equipment curbs
    .7 Roof hatches
    .8 Expansion joints assemblies

.5 Certification
  .1 Submit roof manufacturer's certification that insulation furnished are acceptable.
  .2 Submit roof manufacturer's certification that insulation furnished is acceptable to roofing manufacturer as a component of roofing system and is eligible for roof manufacturer's system warranty.
  .3 Provide approval letters from insulation manufacturer for use of their insulation within this particular roofing system type.

1.4 Performance Requirements

.1 General Performance: Installed membrane roofing and flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Membrane roofing and flashings shall remain watertight.

.2 Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by membrane roofing manufacturer based on testing and field experience.

1.5 Quality Assurance

.1 The roofing Contractor shall be of recognized standing with a proven record of satisfactory installations and shall be acceptable to the roofing product manufacturer.

.2 Roofing shall be executed under the full-time supervision of a competent foreman.

.3 All roofing work shall be carried out by applicators fully experienced in this type of work.

.4 Pre-installation Roofing Conference: Conduct conference at Project site. Contractor's site foreman, roofing-system manufacturer's technical representative, Roofing Installer, Owner's Representative, Consultant shall attend.
.1 Site use, access, staging, and set-up location limitations.
.2 Review methods and procedures related to roofing installation, including manufacturer's written instructions. Including, but not limited to, the following: forecast weather conditions, storage and protection of materials prior to installation, surface preparation and pretreatment, environmental conditions.
.3 Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
.4 Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
.5 Review structural loading limitations of roof deck during and after roofing.
.6 Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
.7 Review governing regulations and requirements for insurance and certificates if applicable.
.8 Review temporary protection requirements for roofing system and surrounding work during and after installation.
.9 Review roof observation and repair procedures after roofing installation.
.10 Reporting procedures.
.11 Related project details and interfaces with adjacent work.
.12 Testing and inspection requirements.
.13 Notification procedures for inspections.
.14 Documentation of modifications and repairs for project record.
.15 Documentation required for manufacturer's warranty.
.16 Quality control and quality assurance plans.

1.6 Manufacturer's Design Responsibility

.1 Provide total roofing assembly confirmation of conformity to "ULC Class A" design criteria. Confirmation to include project specific Uniform Wind Uplift Load Capacity (required for each roof section). Installed roof system shall withstand negative (uplift) design wind loading pressures complying with site specific conditions and all local buildings codes. It is the responsibility of the manufacturer to provide the contractor with a detailed report endorsing the attachment methods proposed.

.2 The roofing contractor must receive written authorization from the manufacturer's inspector and the consultant to proceed.

1.7 Manufacturer's Inspections

.1 Report progress and quality of the work as observed. Progress reports must be published and distributed to all project stakeholders weekly.

.2 Provide periodic (minimum of 3 days per week) roofing installation inspections: Inspections must include; photographic documentation of work in-progress and written statements of compliance with details/shop drawings. Full time inspector for manufacturer on site 1 out of every 2 days that roof is being installed.

.3 Report to the Consultant in writing any failure or refusal of the contractor to correct unacceptable practices called to the contractor's attention.

.4 Prior to commencement of roof membrane application, the manufacturer’s roofing inspector shall review the installation of the insulation substrate to confirm that the finished roof system will have no flat or negatively sloped areas which will affect the performance of the roof or will adversely impact or void the roofing warranty.

.5 Confirm after project completion that the manufacturer has observed no application procedures in conflict with the specifications other than those that may have been previously reported and corrected.

1.8 Shipping, Handling and Storage

.1 Refer to Section 01 61 00 – Common Product Requirements.

.2 Deliver, handle and store materials in accordance with manufacturer’s printed instructions.

.3 Provide and maintain adequate facilities or access to facilities to take receipt of and store roofing materials so that the materials are ready to be built in.

.4 Deliver and store materials undamaged in original unopened containers with manufacturer's label and seals intact. Materials not identified shall be removed off the site. Containers shall be stored upright, and roofing membrane shall be stored on end to prevent flattening. All materials shall be protected from moisture at all times. No material shall be placed in direct contact with the earth.

.5 Store adhesives and emulsion-based waterproofing mastics at a minimum +5°C. Store adhesives and solvent-based mastics at sufficiently high temperatures to ensure ease of application. Do not store adhesive containers with opened lids.

.6 All materials must be stored in a dry area and protected from water and direct sunlight. Damaged materials shall be replaced at roofing Contractor's expense.

.7 Storage of insulation and roofing materials on the roof is prohibited.

1.9 Project Conditions

.1 Safety
- .1 Take all necessary precautions regarding worker health and safety when using solvents and adhesives.
- .2 Store flammable liquid and materials away from open sparks, flames and extreme heat.
- .3 Take necessary precautions when using solvents and adhesives near fresh air intakes.
- .4 Comply with all OSHA requirements for construction.

.2 Daily site cleanup shall be performed to minimize debris and hazardous congestion.

.3 Weather Limitations: Proceed with installation only when existing and forecasted weather conditions e.g. extreme temperature, high winds, high humidity and moisture, permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

.4 Verify existing dimensions and details prior to installation of materials. Notify Consultant of conditions found to be different than those indicated in Contract Documents. Consultant will review situation and inform Contractor and Installer of changes.

.5 Install materials in strict accordance with safety requirements required by roofing manufacturer, Material Safety Data Sheets, and local, state, and federal rules and regulations.

.6 Protection
- .1 Schedule installation sequence to limit access and utilization of the newly installed membrane for material storage, construction staging, mechanical and/or excessive foot traffic.
- .2 Protect roofing membrane, building surfaces, paving, and landscaping from traffic and roofing equipment. Provide temporary walkways constructed of plywood and set on protective material in traffic and construction areas.
- .3 Restore or replace all work or materials damaged by the roofing operation.
- .4 Remove protection materials upon completion of work.
- .5 Adverse weather could have a detrimental effect on adhesives, general production efforts or the quality of the finished installation. Contact manufacturer for recommendations and acceptable tolerances.

.7 Daily seal: Ensure that moisture does not penetrate beneath any completed sections of the roof by sealing temporary roof terminations at the end of each work day and prior to the arrival of inclement weather. Inspect existing components for moisture intrusion along the temporary terminations at temporary cut-offs, tie-ins, and night seals after opening the seal on the next workday. Remove any wet, damp or moisture-damaged materials.

.8 All construction debris shall be removed from the construction site and legally dispose of offsite.

1.10 Environmental Requirements
- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labeling and provision of Safety Data Sheets (SDS) acceptable to Labour Canada.
- .2 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.
- .3 Ventilate area of work as directed by Owner by use of approved portable supply and exhaust fans.

1.11 Waste Management and Disposal

- .1 Refer to Section 01 74 19 – Construction Waste Management and Disposal.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.
- .4 Place materials defined as hazardous or toxic in designated containers.
- .5 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, and local regulations.

1.12 Warranty

- .1 Warrant the work of this Section against defects of workmanship and material, for a period of two years from the date of Substantial Performance and agree to make good promptly any defects which occur or become apparent within the warranty period.

.2 Defects to include but not be restricted to leaking, failure to stay in place, undue expansion, lifting, deformation, loosening and splitting of seams, joint deformation, failure to adhere, deterioration, blisters, etc.

.3 Manufacturer's Extended Warranty: Provide manufacturers extended thirty (30) year warrantee to cover repair or replacement costs for Labour, Materials and Workmanship required to restore roof or system to watertight condition, after a leak has occurred, due to defective materials or system related failures. Warranty shall be Non Pro Rated and must be covered to the original installation cost for the full thirty (30) years from the date of Substantial Performance.

PART 2 PRODUCTS

2.1 Manufacturer

2.2

.1 When a particular trade name or performance standard is specified it shall be indicative of a standard required. Drawings were designed for roofing products and systems manufactured or supplied by Garland Canada. If other products are proposed the bidder must request alternate products in the question period with the manufacturer, products, details, and specifications that they intend to use on the Project. If no manufacturer and products are listed, the bid may be accepted only with the use of products specified.
   .1 Bidder will not be allowed to change materials after the bid opening date.
   .2 If alternate products are included in the bid, the products must be equal to or exceed the products specified. Supporting technical data shall be submitted to the Owner for approval by consultant prior to closing of question period.
   .3 Alternate requests are to be submitted during the questions period by a bidding contractor, questions from suppliers are not permitted.

.2 Compatibility between roofing system components is essential. All materials used on the roof shall be endorsed for compatibility by the applicator and the materials manufacturer.

2.3 Systems

.1 Provide insulated Modified SBS/SIS Bituminous roof systems as indicated complete with all materials and accessories required for a complete installation.

.2 All roof areas shall have a minimum slope of 2% to drains. Existing wood decks are sloped, survey roof decks to determine actual slope conditions. Provide tapered insulation where indicated and where required to provide the necessary slope. Flat roof areas or negatively sloped areas which retain standing water are not permitted.

2.4 Materials

.1 Two Ply Vapour Barrier: Install one ply HPR Glasbase felt fastened to wood decking, then install one ply HPR Glasbase felt adhered directly to fastened ply. Adhered with zero VOC urethane cold adhesive as recommended by manufacturer.

.2 Polyisocyanurate Insulation: to ASTM C1289 and ULC 704 rigid, closed cell polyisocyanurate foam core bonded to heavy duty glass fiber mat facers. Adhere with high rise insulation adhesive as recommended by manufacturer.
   .1 Thickness: two layers as indicated.
   .2 R-Value: 15.5 per layer (total R-31).
   .3 1220 x 1220 mm boards.

.2 Tapered Insulation: Tapered Insulation: Existing wood decking is sloped as per drawing, install tapered where required to maintain minimum 2% slope.

.3 Cover Board: 13 mm thick high density one-sided fibreboard. Board size 1220 mm x 1220 mm. Adhere with high rise adhesive as recommended by manufacturer.

.4 Tapered Edge and Cant Strip: Fiber tapered edge strip, 13 mm to 0 by 152 mm. Cant strip and/or tapered edge to be mineral aggregate meeting HH-I-529B.

.5 SBS Modified Bitumen Base Sheet: 80 mil thickness modified bitumen membrane with fiberglass reinforcement sandwiched between SBS rubber in a high penetrating index asphalt mixture, minimum tensile strength 54 kN/m, minimum tear strength 1300 N, and low temperature flexibility -34C. Conforming to CSA A123.23-15, Type C, Grade 3.

.6 SBS/SIS Modified Bitumen Mineral Cap Sheet: 160 mil minimum thickness modified bitumen membrane sheet consisting of two laminated layers of polyester and fiberglass scrim reinforcement sandwiched by SBS/SIS in a high penetration index asphalt mixture, minimum tensile strength 85 kN/m, minimum tear strength 4000 N, and minimum low temperature flexibility -34C. Granule colour cool gray. Granules with smog reduction capabilities equal to 1 mature tree per 100 square meters of cap sheet. Conforming to ASTM D6162, Type III.

.7 SBS Modified Bitumen Base Flashing: 80 mil thickness modified bitumen membrane with fiberglass reinforcement sandwiched between SBS rubber in a high penetrating index asphalt mixture, minimum tensile strength 54 kN/m, minimum tear strength 2891 N, and low temperature flexibility -34. Conforming to CSA A123.23-15, Type C, Grade 3.

.8 SBS/SIS Modified Bitumen Mineral Cap Flashing: 160 mil minimum thickness modified bitumen membrane sheet consisting of two laminated layers of polyester and fiberglass scrim reinforcement sandwiched by SBS/SIS in a high penetration index asphalt mixture, minimum tensile strength 85 kN/m, minimum tear strength 4000 N, and minimum low temperature flexibility -34C. Granule colour cool gray. Conforming to ASTM D6162, Type III.

.9 Asphalt Primer: ASTM D 41.

.10 Cold Modified Bitumen Adhesive:
  .1 Specially formulated cold process adhesive recommended by membrane manufacturer. Low VOC adhesive with SEBS and SIS modifiers maintain flexibility and provides excellent UV resistance and heat stability.

.11 Mastic Sealant: Elastomeric, asphaltic mastic formulated with SEBS rubber that ensure superior fatigue resistance.

.12 Flashing Cement: ASTM D4586, asbestos free, of consistency required by roofing-system manufacturer for application. Use for sealing laps in membrane or base flashing, surface or stripping flashing at equipment penetrations and drains, or repairs to membrane or flashing.

.13 Low-rise urethane adhesive: Used to adhere insulation and cover board within the roof assembly, as acceptable to roofing system manufacturer.

.14 Termination Bar: Roofing-system manufacturer’s standard; aluminum bars, approximately 25 mm wide by 3.0 mm thick; with predrilled holes 152 mm on center.

.15 Walkway Pads: Rubber walkway pad adhered with cold adhesive. Walkway pad 1016 mm x 1016 mm. Installed at doors, ladders, and downspouts.

.16 Stack jacks (vent pipe flashings): Lexsuco or Thaler standard mill finish aluminum insulated vent stack covers applicable at all plumbing vent pipes. Rubber sleeves and sleeves supplied by other trades will not be acceptable.

.17 Miscellaneous Accessories: Provide those recommended by roofing system manufacturer.

PART 3 EXECUTION

3.1 Manufacturer's Instructions

.1 Perform all work in accordance with membrane manufacturer's material installation printed instructions for specified system installation and as specified herein.

3.2 Protection

.1 Protect installed Work of other trades and existing building and site, from staining or contamination.

3.3 Examination

.1 Verify actual site dimensions and location of adjacent materials prior to commencing work. Notify Consultant in writing of any conditions which would be detrimental to installation.

.2 Verify roof penetrations are present in quantity required.

.3 Verify wood blocking is securely anchored to deck and nailers match thickness of roof insulation.

.4 Examine substrate for compliance of conditions that affect installation and performance of roof system.

.5 Application of the roofing system constitutes an agreement that the roofing contractor has inspected and found the substrate suitable for the installation of the Roofing System.

3.4 Workmanship

.1 Workmanship shall be of the highest quality. Use only competent mechanics and execute work in accordance with drawings and specifications.

.2 Regard the manufacturer's printed recommendations and specifications as the minimum requirement for materials, methods and workmanship not otherwise specified.

.3 Unsuitable or damaged materials shall immediately be removed from the site.

.4 Install roofing elements on clean, dry surfaces. Materials shall not be applied during inclement weather. Do not apply roofing over wet decks, or where frost or snow is present.

3.5 Substrate Preparation

.1 Wood Deck

.1 Deteriorated decking shall be repaired and/or replaced with appropriate materials according to standard industry regulations, practices, and consultant approval.

.2 Repair any depressions or voids in wood.

3.6 Roofing System Installation

.1 Install roofing membrane and flashings according to roofing-system manufacturer's written instructions and applicable recommendations of NRCA/ARMA Quality Control Guidelines for Application of Polymer Modified Bitumen Roofing.

.2 Install materials in strict accordance with safety requirements required by roofing-system manufacturer, Material Safety Data Sheets, and local, provincial, and federal rules and regulations. Follow safety procedures of OSHA and other applicable governing agencies. Assume responsibility for Work area safety at all times.

.3 Install continuous, glass-fiber, felts over combustible substrates.

.4 Install metal flashings at penetrations or protect with tight-fitting felt collar.

.5 Substrate-Joint Penetrations: Prevent roofing asphalt from penetrating substrate joints, entering building, or damaging roofing-system components or adjacent building construction.

.6 Coordinate installation of roofing-system components so insulation and roofing membrane sheets are not exposed to precipitation or left exposed at end of workday or when rain is forecast.

.7 Provide tie-offs at end of each day's work to cover exposed roofing membrane sheets and insulation with course of coated felt set in roofing cement or hot roofing asphalt with joints and edges sealed.

.8 Complete terminations to flashings and provide temporary seals to prevent water from entering completed sections of roofing system.

.9 Remove and discard temporary seals before beginning work on adjoining roofing.

.10 Prohibit foot traffic and equipment movement over roofing system until adhesive has cured. Minimize foot traffic and equipment movement over base ply prior to installation of membrane top ply/cap sheet.

.11 Cooperate with Consultant and Testing Agency in performing inspections and testing of roofing system.

3.7 Air/Vapour Barrier

.1 Air/vapour barrier membrane shall be adhered directly to clean wood deck.

.2 Fasten HPR Glasbase felt to wood deck.

.3 Apply one part asphalt modified urethan adhesive that is VOC free at a rate of 0.83 l/m2 (2 gal/square) to properly prepared substrates.

.4 Apply in straight lines, free from wrinkles, tears or open laps.

.5 Adhered one ply HPR Glasbase felt in zero VOC cold adhesive.

.6 Seal end laps according to manufacturer's instructions.

.7 At perimeters, vertical walls and curbs, etc. apply a 300 mm wide strip of vapour retardant and seal to air barrier membrane.

3.8 Insulation

.1 Keep insulation dry at all times. Insulation showing evidence of having been dampened since its manufacture or separation of laminations shall not be used. Lay insulation panels with all joints staggered. Insulation shall be laid with the longest side parallel to the flutes unless the manufacturer stipulates otherwise. Lay board in tight contact to prevent gaps and resulting loss of thermal insulation value. Cut boards to fit neatly around projections through roof.

.2 Insulation: Install insulation to vapour retarder in ribbons of high rise adhesive in accordance with manufacturer's instructions as per 1-90 wind uplift requirements.
.1 Apply ribbons of two component VOC compliant high rise insulation adhesive, 304 mm OC per 1220 mm x 1220 mm insulation board zone 1, 152 mm OC zone 2, and 102 mm OC zone 3. A ribbon thickness of 12.7mm to 19.05 mm must be maintained. Tightly brace and stager all seams to allow no gaps in insulation. Do not slide the boards and do not allow the adhesive to skin over. Step each board into place to ensure full contact with the adhesive

.3 Protect all exposed edges of insulation where roofing temporarily terminates at the end of a working day by forming a water cut off. Water cut off shall extend from the surface of the roof membrane minimum 200 mm onto the deck. Ensure water cut off is continuously secured to the deck and is removed prior to proceeding with work the following day.

.4 At roof drains and scupper drains, reduce the insulation thickness by 13 mm for a distance of 600 mm from the center of the drain.

.5 Protect all exposed edges of insulation where roofing temporarily terminates at the end of a working day by forming a water cut off. Water cut off shall extend from the surface of the roof membrane minimum 200 mm onto the deck. Ensure water cut off is continuously secured to the deck and is removed prior to proceeding with work the following day.

.6 Install tapered insulation where indicated and in accordance with the reviewed shop drawings.

.7 Insulation shall not be installed to bridge across control joints.

3.9 Cover Board

.1 Install wood fiber cover board to insulation in ribbons of high rise adhesive in accordance with manufacturer's instructions as per 1-90 wind uplift requirements.

.2 Apply ribbons of two component VOC compliant high rise insulation adhesive, 304 mm OC per 1220 mm x 1220 mm cover board zone 1, 152 mm OC zone 2, and 102 mm OC zone 3. A ribbon thickness of 12.7mm to 19.05 mm must be maintained. Tightly brace and stager all seams to allow no gaps in insulation. Do not slide the boards and do not allow the adhesive to skin over. Step each board into place to ensure full contact with the adhesive.

.3 Lay coverboard with joints offset minimum 300 mm from underlying layer.

.4 At drains ensure sump depth is kept to a minimum of 13 mm below finished roof surface.

3.10 Cant Strip

.1 Mechanically attach cant strip at junction with vertical surfaces in accordance with manufacturer's instructions.

3.11 Modified Bituminous Membrane Installation

.1 Modified-Bitumen Membrane Installation: Install roofing membrane base ply and cap sheet.

.2 Install all roofing membrane and flashing systems, and all accessory components in accordance with the Drawings and Specifications; unless the manufacturers printed instructions are more restrictive. Request for clarification shall be submitted in writing to the Consultant.

.3 Unroll sheets and allow to relax before installing.

.4 Cut out factory splices in top ply. Alternately, cover splice with full-width section of top-ply membrane that extends at least 152 mm beyond sides of splice.

.5 Accurately align sheets without stretching and maintain uniform side and end laps of minimum dimensions required by roofing-system manufacturer for selvage and non-selvage laps.

.6 Start at low point of roof deck and shingle side laps with slope of deck where possible.

.7 Stagger end laps at least 900 mm.

.8 Extend sheets over and terminate not less than 25 mm above top of cants.

.9 Embed base ply, and adhere to substrate, in a continuous coating of cold process adhesive without breaks or voids.

.10 End Laps - All end laps shall be lapped a minimum of 152 mm, or as specified by the manufacturer, and all membrane laps shall show a "bleed-out" of between 6 mm and 13 mm. Corners of the end laps are to be rounded.

.11 Adhere top ply according to manufacturer's recommendations with cold process adhesive.

.12 Broom each ply immediately to firmly embed into adhesive, free of wrinkles, creases, fish mouths, or air pockets.

.13 Cut out wrinkles and fishmouths, and repair with same number of plies removed.

.14 Prepare and prime non-selvage laps as recommended by roofing-system manufacturer.

.15 Continuously bond and seal laps, leaving no voids.

.16 Repair wrinkles and voids in lapped seams. No Foot Traffic on New Membrane - Set up points, charge points, debris chutes, drinking water containers and all other destination facilities shall be located in such a way as to preclude traffic over the newly installed membrane. No workers shall walk on the newly completed membrane for at least thirty minutes after installation to allow for cooling of the asphalt to prevent compression and displacement of asphalt due to point loading or concentration of weight due to a person's foot or equipment.

.17 Embed roof granules in bleed out in accordance with the membrane manufacturer's recommendations.

.18 Install modified bituminous roofing membrane cap sheet according to roofing manufacturer's written instructions, starting at low point of roofing system. Extend roofing membrane sheets over and terminate beyond cants, installing as follows:
.1 Adhere to substrate in a cold process adhesive applied at the rate of 5.6 to 9.5 litres per 9.3 m^2.
Unroll roofing membrane sheets and allow them to relax for minimum time period required by manufacturer.

.19 Laps: Accurately align roofing membrane sheets, without stretching, and maintain uniform side and end laps. Stagger end laps. Completely bond and seal laps, leaving no voids.
.1 Seal all laps with cold process adhesive or heat weld per manufacturer's recommendations.
.2 Repair tears and voids in laps and lapped seams not completely sealed.
.3 Apply roofing granules to cover exuded bead at laps while bead is hot.

.20 Install roofing membrane sheets so side and end laps shed water.

3.12 Flashing and Stripping Installation

.1 General: Install base flashing over cant strips and other sloping and vertical surfaces, at roof edges, and at penetrations through roof, and secure to substrate according to roofing-system manufacturer's written instructions.

.2 Base Flashing:
.1 Accurately align base flashing sheets without stretching and maintain uniform side and end laps required by roofing-system manufacturer for selvage and non-selvage laps.
.2 Start wall and curb base flashing at low point of roof deck and shingle with slope of deck.
.3 Flashing Plies not to exceed 1000 mm in width. Extend base flashing plies to top of curbs, to within 25 mm of counterflashing reglets, at least 200 mm above finished surface of roofing system, and 100 mm onto field of roofing membrane. At locations where height of wall exceeds height acceptable to roofing-system manufacturer, comply with recommendations of roofing-system manufacturer for flashing high walls. Recommendations include flashing in two stages: bottom half to recommended maximum height preceded by top half over remainder of wall.
.4 Bond and seal laps, leaving no voids. Repair wrinkles and voids in laps and lapped seams. Prepare and prime non-selvage laps as recommended by roofing system manufacturer.
.5 Install at least one ply of base flashing membrane same day that roofing membrane is installed to provide temporary watertight seal.

.3 Flashing Sheet Application:
.1 Adhere flashing sheet to substrate in solid coating of flashing cement. Press sheet firmly into place to ensure continuous adhesion to substrate with no voids, wrinkles, or un-adhered base flashing.
.2 Cut sheets off end of roll and install vertically, working to selvage edge.
.3 For sheets without selvage edges or where selvage edge cannot be provided, limit length of sheets to 1.5 meters maximum. Prepare and prime non-selvage edges as recommended by roofing-system manufacturer.
.4 Stagger end lap seams in top ply at least 152 mm from lap seams in bottom plies.

.4 Extend base flashing up walls or parapets a minimum of 200 mm above roofing membrane and 100 mm onto field of roofing membrane.

.5 Mechanically fasten top of flashing securely at terminations and perimeter of roofing using termination bar.

.6 Seal termination bar with flashing cement as recommended by manufacturer.

.7 Install roofing membrane cap-sheet stripping where metal flanges and edgings are set on membrane roofing according to roofing system manufacturer's written instructions.

.8 Reinforce vertical seams with three course mastic and fiberglass mesh as recommended by manufacturer and cover with metal counter flashing down to the field of the roof.

3.13 Roof Drains

.1 Sump insulation a minimum of 600 mm in each direction as measure from the center of the drain.

.2 Install membrane bottom plies. Extend 25 mm beyond inside edge of drain bowl flange.

.3 Apply primer to both sides of 760 x 760 mm, lead flashing, and allow to dry. Center lead flashing over drain and set in continuous application of modified-bitumen mastic. Trim lead flashing to extend 25 mm beyond inside edge of drain bowl flange.

.4 Install additional 1000 x 1000 mm, base-flashing, backer sheet or bottom ply over lead flashing.

.5 Install membrane cap sheet over base flashing. Extend 25 mm beyond inside edge of drain bowl flange.

.6 Trim flashing as necessary to 25 mm from inside edge of drain bowl flange.

.7 Install clamping ring and drain strainer.

.8 Install clamping ring same day that base flashing installed to prevent water back-up under membrane.

.9 Remove and reinstall clamping ring when membrane top-ply installed, if installed at later time.

.10 Securely fasten clamping ring to provide continuous compression of drain flashings.

.11 Install strainer dome.

.12 At end of project, test drains for watertightness and ensure that drains flow freely.

3.14 Equipment and Expansion Joint Curbs

.1 Refer to general base flashing installation requirements and the following additional procedures.

.2 At wood curbs for equipment and expansion joint assemblies, extend base ply of flashing membrane up and over top of curb, and secure with nails to blocking.

.3 Extend cap flashing membrane sheet up vertical surface of curb and terminate at top edge as shown on Drawings. For expansion joint locations, seal top edge of cap sheet with mastic. Securement shall be by fasteners that attach expansion joint assembly to curbs.

.4 For curbs where integral sheet metal flashing is used but not attached to face of curb, install termination bar through cap sheet as shown on Drawings with fasteners at 52 mm on center.

.5 Equipment Penetrations. Flash per Drawing details or per roofing-system manufacturer's recommendations.

.6 Prime flange of sheet-metal flashing, allow to dry, and set in modified-bitumen adhesive.

.7 Apply sealant at base flashing termination on sheet metal flashing.

3.15 Walkway Installation

.1 Walkway Pads: Install walkway pads using units of size indicated or, if not indicated, of manufacturer's standard size according to walkway pad manufacturer's written instructions.
.1 Fully adhere walkway pads in cold-applied adhesive.

.2 Use only full-size units, except partial units at corners if necessary to provide neat, finished appearance.

.3 Provide 50 mm minimum between adjacent units. Extend walkway 150 mm minimum beyond edges of equipment or supports.

.4 Sweep loose surfacing material from walkway locations.

.5 Cap Sheet Strips: Set strips, in lengths not exceeding 3.0 m in heavy application of asphalt mastic or same bitumen used to install roofing system, in accordance with recommendations of walkway and roofing-system manufacturers. Walkways shall be fully adhered to roofing cap sheet.

3.16 Metal Flashing

.1 Metal flashings shall be completed in accordance with Section 07 62 00. Install counter flashing down to the field of the roof covering all parapets and curbs.

3.17 Mechanical and Electrical Equipment

.1 All electrical conduits and gas lines must be sufficiently supported as directed by the Consultant.

.2 Install rain collars complete with clamping rings over all pitch pockets and stacks where vandal proof caps cannot be installed.

.3 Provide purpose made stack jack flashings at all plumbing vents.

.4 Seal flashing sleeves in accordance with manufacturer's directions and CRCA standard details

3.18 Testing and Inspection

.1 Inspect completed membrane and flashings for punctures, tears and discontinuous seams. Apply additional layer of membrane over punctures and tears, extending minimum 50 mm beyond damaged area in all directions.

.2 Independent Inspection and testing shall be performed as specified under Section 01 45 00 – Quality Control. Provide necessary facilities and cooperate with designated inspection and testing agency.

.3 Manufacturer’s Inspections: Arrange for the roofing systems manufacturer to provide qualified technical personnel for onsite observation and instruction full time at beginning of membrane installation to establish project standard and thereafter as the manufacturer deems necessary, but not less than 1 time every two days when roofing membrane and related work is being performed. A field observation report from each visit will be generated and submitted to the Consultant weekly.

.4 Infrared Survey: If roofing cap sheet is not installed immediately after the smooth surfaced base sheet is installed, provide an infra-red survey of entire roof area. Survey shall be performed by organization that is approved by the Consultant. Infra-red survey and subsequent report shall be performed prior to the installation of the roofing cap sheet.

.5 Roofing system will be considered defective if it does not pass tests and inspections.
- .1 Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.
- .2 Repair or remove and replace components of roofing system where test results or inspections indicate that they do not comply with specified requirements.

End of Section

PART 1 GENERAL

1.1 General

.1 Conform to the requirements of Division 1.

1.2 Related Sections

.1 Section 07 71 00 Roof Specialties and Accessories
.2 Section 07 92 00 Joint Sealants

1.3 References

.1 Canadian Roofing Contractors Association (CRCA) Roofing Specifications Manual.
.2 ASTM International (ASTM)
  .1 ASTM A653/A653M-15e1 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
  .2 ASTM D523-14 Standard Test Method for Specular Gloss
.3 Canadian Standards Association (CSA):
  .1 CSA B111, Wire Nails, Spikes and Staples.
.4 Canadian General Services Board (CGSB):
  .1 CAN/CGSB 1.108-M, Bituminous Solvent Type Paint.
  .2 CAN/CGSB-37.5, Cutback Asphalt Plastic Cement.
  .3 CAN/CGSB-51.32, Sheathing, Membrane, Breather Type.
.5 Canadian Sheet Steel Building Institute (CSSBI):
  .1 CSSBI - Standard Practice for Sheet Steel Cladding.
  .2 CSSBI 20M-91 Sheet Steel Cladding for Architectural and Industrial Applications.
  .3 CSSBI B16-94 Prefinished Sheet Steel for Building Construction.

1.4 Submittals

.1 Make submittals in accordance with Section 01 33 00 – Submittal Procedures.

.2 Submit duplicate 300 x 300 mm samples of each type of sheet metal material, colour and finish when requested by the Consultant.

.3 Submit WHMIS Material Safety Data Sheets for all products intended to be used, including adhesives and sealants.

1.5 Design and Performance Requirements

.1 Appearance: neatly and evenly lay out and install components. Exposed fastening devices not permitted.

.2 Effects of Wind: resist positive and negative wind pressures without detrimental effects.

.3 Water Control: prevent passage of water.

.4 Thermal Movement: accommodate expansion and contraction of component parts without buckling, failure of joints, undue stress on fasteners and other detrimental effects.

.5 Compatibility: components shall be compatible with dissimilar metals and materials with which they are in contact or fastened to so as to prevent corrosion, staining and other detrimental effects. If required, treat or separate contact surfaces with inert and non-staining insulation material to achieve compatibility.

1.6 Quality Assurance

.1 Work of this Section shall be performed by a qualified sheet metal contractor with a minimum of 5 years of experience in the type of work required and specified. Submit proof of experience where requested by the Consultant.

1.7 Shipping, Handling and Storage

.1 Refer to Section 01 61 00 – Common Product Requirements.

.2 Materials shall be handled and stored on the job in such a manner that no damage shall be done to the material or the structures.

.3 Materials showing evidence of improper handling and storage shall be rejected and removed from the site at no additional expense to the Owner.

1.8 Waste Management and Disposal

.1 Refer to Section 01 74 19 – Construction Waste Management and Disposal.

1.9 Warranty

.1 Warrant the work of this Section against defects of workmanship and material, for a period of five (5) years from the date of Substantial Performance and agree to make good promptly any defects which occur or become apparent within the warranty period.

.2 Submit manufacturer’s warrantee that pre-finished materials will not lose film integrity for 25 years and will not chalk or fade for 20 years following date of Substantial Performance.

PART 2 PRODUCTS

2.1 General

.1 Ensure compatibility of all materials in contact with roof membrane.

2.2 Materials

.1 Sheet Metal: 24 gauge (0.61 mm) thick galvanized sheet steel, commercial quality to ASTM A653 Grade 'A' with a minimum yield stress of 230 MPA, and a working stress of 144 MPA, to CSA 136. Material shall have Z275 designation zinc coating.

.2 Prefinished material shall be colour coated with manufacturer’s standard finish system equivalent to VicWest Colourite HMP with 100% ceramic colour pigmentation, minimum dry film thickness of 1.0 ± 0.2 mils (ASTM D1005). This Section shall supply all metal flashing for all roof and wall applications whether shown or not, and as necessary for the complete installation.

.1 Colour for all sheet metal flashing and trim shall be as selected by the Consultant from full range of manufacturer’s standard colours.

.3 Continuous hook on strips and metal bellows: 22 gauge (0.65 mm) galvanized sheet steel, zinc coating designation ZF275.

.4 Isolation Coating: Alkali resistant exterior bituminous paint to CAN/CGSB 1.108-M.

.5 Plastic Cement: To CAN/CGSB 37.5.

.6 Nails, Bolts, Screws and Other Fastenings: same metal finish as sheet metal being used to CSA B111. The size of fastenings shall suit the applicable conditions.

.7 Underlay: No. 15 perforated asphalt felt to CSA A123.3-M or dry sheathing, breather type, to CAN/CGSB-51.32

.8 Cleats: Of same material, and temper as sheet metal, minimum 50 mm wide. Thickness same as sheet metal being secured.

PART 3 EXECUTION

3.1 General

.1 Install sheet metal work in accordance with CRCA specifications and as detailed.

.2 Use concealed fastenings except where approved before installation.

3.2 Fabrication

.1 Fabricate metal flashings and other sheet metal work in accordance with applicable CRCA specifications and as indicated.

.2 Form pieces in 2440 mm maximum lengths.

.3 Hem exposed edges on underside 13 mm. Mitre and seal corners with sealant.

.4 Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.

.5 Apply isolation coating (two coats) to metal surfaces to be in contact with concrete or mortar or dissimilar metals.

.6 Install underlay under sheet metal in accordance with CRCA "FL" series details. Lap joints 100 mm.

.7 All seams shall be of the "slip lock type" that permit adequate movement without resulting in deformation or loosening of metal flashings. Lapped joints or exposed raw edges will not be accepted. Exposed edges shall be "double back" at least 13 mm. At eaves and parapets, metal shall be hooked over continuous starter strips minimum 1 gauge thicker than the metal used for flashing. Secure starter strips at 300 mm on centre or closer as required.

.8 All flashings shall be installed in perfectly straight lines. Irregular or badly fitted work will not be accepted. Exposed fastenings will only be permitted where concealed fastening is not possible. Provide neoprene washers for exposed fasteners.

.9 Imperfections in metal flashing work such as holes, dents, creases, or oil-canning will not be accepted.

3.3 Caulking of Flashings

.1 Sealants shall be as specified in Section 07 92 00 - Joint Sealants.

.2 Caulk all joints in flashing.

.3 Dissimilar metals in contact, or metals in contact with adjacent surfaces shall be separated from one another to prevent corrosion, staining, or electrolysis by use of approved methods and materials.

.4 Do caulking between metal flashing and concrete.

.5 Caulking compound shall be applied in strict accordance with the manufacturer's application instructions. Use proper surface primers where necessary.

.6 Colour of caulking compound shall be the integral colour of the abutting material.

3.4 Cleaning

.1 Proceed in accordance with Section 01 74 11 – Cleaning.

End of Section

PART 1 GENERAL

1.1 General

.1 Conform to the requirements of Division 1.

1.2 Related Sections

.1 Section 07 52 16 Cold Adhesive Modified Bituminous Roofing
.2 Section 07 62 00 Sheet Metal Flashing and Trim
.3 Section 07 92 00 Joint Sealants

1.3 References

.1 Canadian Standards Association (CSA)
  .1 CSA B272-93 (R2000), Prefabricated Self-Sealing Roof Vent Flashings

1.4 Submittals

.1 Make submittals in accordance with Section 01 33 00 – Submittal Procedures.

.2 Submit shop drawings and manufacturers literature:
  .1 Indicate size and description of components and materials, arrangement of hardware, operating mechanism, required clearances, fasteners, anchoring, and finishes.
  .2 Shop drawings for roof hatch: Indicate profiles, sizes, connections, size, and type of fasteners and accessories.
    .1 Shop drawings for roof hatch shall be stamped by a professional engineer registered in the Province of Ontario.

1.5 Shipping, Handling and Storage

.1 Refer to Section 01 61 00 – Common Product Requirements.

.2 Deliver, handle and store materials in accordance with manufacturer’s printed instructions.

.3 Do not store roof pavers in piles or on pallets on roof

1.6 Waste Management and Disposal

.1 Refer to Section 01 74 19 – Construction Waste Management and Disposal.

1.7 Warranty

.1 Warrant the work of this Section against defects of workmanship and material, for a period of two (2) years from the date of Substantial Performance and agree to make good promptly any defects which occur or become apparent within the warranty period.

PART 2 PRODUCTS

2.1 Materials

.1 Stack jacks Thaler S1-31 insulated vandal proof sleeve vent stack covers with standard mill finish with perforated collar or approved equal. Rubber sleeves and sleeves supplied by other trades will not be acceptable.

.2 Roof stack jack flashings, sized to suit:
.1 Dektite retrofit round rubber roof pipe flashing
.2 Vicwest Master Flash/Retro-flash.

.3 Blanket Insulation: Fibreglass insulation to CSA A101-M, Type 1, not less than 0.6 pound per cubic foot density. Thickness of insulation shall provide a thermal resistance rating of R20 when not compressed.

.4 Pourable Sealer: 2-part polyurethane sealer intended for use by the manufacturer to seal pitch pans and other penetrations.

2.2 Roof Drains and Roof Access Hatch

.1 Roof Drains:
1. Foundry cast heavy duty aluminum hinged dome drain, vandal resistant. Drains shall be compatible with specified roof system including matching flow control where existing.

.2 Roof Access Hatch:
Provide single leaf roof access hatch to match existing in size.
1. Acceptable Products:
i. Bilco Type S-50-TB 36"X30" (site verify size) thermally broken roof hatch complete with aluminum cover and curb.
ii. Cover and frame shall be 11 gauge aluminum. Cover to be thermally broken, filled with polyisosanurate insulation to an R value of <20, and be internally reinforced to withstand a live load of 40 PSI. The curb is to be 12" high, fully welded complete with 3" of polyisosanurate insulation with a mounting flange. Hinges shall be heavy duty, stainless steel and latch shall be complete with interior and exterior turn handles and padlock hasps. Gaskets shall be extend EPDM permanently applied to cover, and finish shall be mill aluminum.
iii. All hardware shall be stainless steel.
iv. Provide roof hatch with 35 mm diameter safety bar coated with 20 mil. PVC colour coated roof safety green. Safety bar shall be mounted so as to not impede operation of door.
v. Allow for increase in depth of insulation, provide minimum 1'-8" clear to top of hatch from top of roof

PART 3 EXECUTION

3.1 Mechanical Vent Flashings

.1 Provide mechanical vent flashings at all mechanical equipment and pipe penetrations through the roof.

.2 Flashings shall be compatible with roofing assemblies.

.3 Install vent flashings and other penetration flashings and seal to roof membrane in accordance with manufacturer's recommendations and details.

.4 Secure all vent flashings and accessories to deck with bolts to meet the manufacturer's specifications.

.5 Coordinate with other trades for location and size of vent flashings.

3.2 Roof Stacks

.1 Remove existing roof vent stacks and flashings. Clean substrate.

.2 Install new stack jack and vent flashings to suit existing conditions and in accordance with manufacturer’s instructions.

3.3 Pitch Pockets

.1 Clean out and replace existing pitch in pitch pockets, with pourable sealer, where indicated.

3.4 Roof Hatch

.1 Install in accordance with manufacturer=s printed instructions.
.2 Secure all hatches to deck with bolts to meet the manufacturer=s specifications.
.3 Shim and level all curbs to suit roof slopes.
.4 Erect hatch level and plum and in proper alignment.
.5 Ensure continuity of building envelope air barrier and vapour retarder systems.
.6 Adjust and seal assembly with provision for expansion and contraction of components.
.7 Install safety bar, securely anchored to curb with tamper proof screws or bolts.

3.5 Cleaning

.1 Proceed in accordance with Section 01 74 11 – Cleaning.

End of Section

PART 1 GENERAL

1.1 General

.1 Conform to the requirements of Division 1.

1.2 Related Sections

.1 Section 07 27 13 Modified Bituminous Sheet Air Barriers
.2 Section 07 41 00 Metal Roof Panels
.3 Section 07 52 00 Modified Bituminous Roofing
.4 Section 07 62 00 Sheet Metal Flashing and Trim
.5 Section 07 71 00 Roof Specialties and Accessories

1.3 References

.1 ASTM International (ASTM)
  .1 ASTM C834-14 Standard Specification for Latex Sealants
  .2 ASTM C920-14a Standard Specification for Elastomeric Joint Sealants
  .3 ASTM C1193-13 Standard Guide for Use of Joint Sealants
  .4 ASTM C1311-14 Standard Specification for Solvent Release Sealants
.2 Canadian General Standards Board (CGSB)
  .1 CGSB 19.13-M, Sealing compound, one component, elastomeric chemical curing.
  .2 CGSB 19-GP-14M Sealing compound, one component, butyl-polyisobutylene, polymer base, solvent curing.
  .3 CAN/CGSB-19.24-M90, Multi component, chemical curing sealing compound.
.3 South Coast Air Quality Management District (SCAQMD) California State
  .1 SCAQMD Rule 1168-03: Adhesives and Sealants.

1.4 Submittals

.1 Make submittals in accordance with Section 01 33 00 – Submittal Procedures.

.2 Submit product data for all sealant materials and accessories.

.3 Submit MSDS Data Sheets for review and acceptance by the Owner prior to delivery to the project site. Obtain written approval from the Owner and do not deliver any materials to the Owner's property, prior to receipt of such approval.

1.5 Quality Assurance

.1 Installation of caulking shall be performed only by workmen thoroughly skilled and specially trained in the techniques of caulking.

.2 Caulking work shall be carried out in strict accordance with manufacturer's printed directions.

1.6 Shipping, Handling and Storage

.1 Refer to Section 01 61 00 – Common Product Requirements.

.2 Deliver, handle and store materials in accordance with manufacturer's printed instructions.

.3 Use all means necessary to protect caulking materials before, during and after installation and to protect the installed work and materials of all other trades.

.4 In the event of damage, immediately make all repairs and replacements necessary to the approval of the Consultant and at no additional cost to the Owner.

.5 Store all caulking materials and equipment under conditions recommended by its manufacturer.

.6 Do not use materials stored for a period exceeding the maximum recommended shelf-life of the material.

.7 Materials shall be delivered to the job in their original containers or wrapping with the manufacturer's seal and labels intact.

1.7 Environmental Considerations

.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.

.2 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

.3 Ventilate area of work by use of approved portable supply and exhaust fans.

1.8 Waste Management and Disposal

.1 Refer to Section 01 74 19 – Construction Waste Management and Disposal.

1.9 Warranty

.1 Warrant the work of this Section against defects of workmanship and material, for a period of three (3) years from the date of Substantial Performance and agree to make good promptly any defects which occur or become apparent within the warranty period.

PART 2 PRODUCTS

2.1 Manufacturer

.1 Products of the following manufacturers are approved for use subject to meeting the specifications for the particular product listed below:
.1 Canadian General Electric
.2 Dow Corning
.3 Nuco Inc.
.4 Sika Canada Limited
.5 Tremco Manufacturing Company (Canada) Ltd.
.6 W.R. Grace and Company.

2.2 Materials

.1 Primers: Type recommended by sealant manufacturer. Low VOC type

.2 Joint Fillers:
.1 Compatible with primers and sealants, outsized 30 to 50%.

.3 Sealants:
.1 Sealants shall be Low VOC Type.
.2 Colour of sealants to be selected by Consultant.
.3 For Exterior Locations: single component gun-grade polyurethane base sealant
.1 Sikaflex 1A.

.4 Bond Breaker Tape: Polyethylene bond breaker tape which will not bond to sealant.

.5 Joint Cleaner: Xylol, methylethyleketon or non-corrosive type recommended by sealant manufacturer and compatible with joint forming materials.

PART 3 EXECUTION

3.1 Inspection

.1 Inspect conditions and substrates upon which work of this Section is dependent. Report to Consultant in writing any defects that may jeopardize the performance of this work.

.2 Commencement of work implies acceptance of conditions.

3.2 Preparation

.1 Remove dust, loose mortar and other foreign matter. Ensure joint surfaces are dry and free of frost.

.2 Remove rust, mill scale and coatings from ferrous metals by wire brush, grinding or sandblasting.

.3 Remove oil, grease and other coatings from non-ferrous metals with joint cleaner.

.4 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.

.5 Examine joint sizes and conditions to achieve correct depth ratio ½ of joint width with minimum width and depth of 6 mm, maximum width 25 mm.

.6 Install joint filler to achieve correct joint depth.

.7 Where necessary to prevent staining, mask adjacent surface prior to priming and caulking.

.8 Apply bond breaker tape where required to ensure performance of sealant.

.9 Prime sides of joints when required and as recommended by sealant manufacturer to ensure performance of sealant immediately prior to caulking.

3.3 Application

.1 Apply sealants in accordance with manufacturer's instructions, in continuous beads, to provide watertight joint. Apply sealant using gun with proper size nozzle. Use sufficient pressure to fill voids and joints solid. Superficial pointing with skin bead is not acceptable.

.2 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities. Neatly tool surface to a slight concave joint.

.3 Clean adjacent surfaces immediately and leave work neat and clean. Remove excess sealant and droppings using recommended cleaners as work progresses. Remove masking after tooling of joints.

3.4 Schedule

.1 Provide sealants at the following locations
- .1 Where required to protect interior from exterior air and water infiltration.
- .2 Joints between all dissimilar materials.
- .3 Other locations where caulking or sealant is required to provide a neat clean junction
- .4 Seal all new and existing metal screws.
- .5 Seal all new and existing snow guard fasteners.
- .6 Seal perimeter of air barrier membranes.
- .7 Seal metal flashings as indicated.

3.5 Cleaning

.1 Proceed in accordance with Section 01 74 11 – Cleaning.

End of Section

PART 1 GENERAL

1.1 General

.1 Conform to the requirements of Division 1.

1.2 References

.1 ASTM International (ASTM)
  .1 ASTM A780/A780M-09(2015) Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
.2 Environmental Protection Agency (EPA)
  .1 Test Method for Measuring Total Volatile Organic Compound Content of Consumer Products, Method 24 (for Surface Coatings).
.3 Master Painters Institute (MPI)
  .1 MPI Architectural Painting Specifications Manual, 2018.
  .2 Standard GPS-1-08 and GPS-2-08 MPI Green Performance Standard for Painting and Coatings.
.4 Society for Protective Coatings (SSPC)
  .1 Systems and Specifications, SSPC Painting Manual 2009.
.5 South Coast Air Quality Management District, California State (SCAQMD)
  .1 SCAQMD Rule 1113-96 Architectural Coatings.
.6 Green Seal GS-11 Green Seal Environmental Standard for Paints and Coatings, January 1997.
.7 National Fire Code of Canada.

1.3 Submittals

.1 Make submittals in accordance with Section 01 33 00 – Submittal Procedures.

.2 Product Data: Submit manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Samples:
  .1 Submit full range colour sample chips to indicate where colour availability is restricted.
  .2 Submit duplicate 200 x 300 mm sample panels of each paint, stain, clear coating and special finish with specified paint or coating in colours, gloss/sheen and textures required to MPI Architectural Painting Specification Manual standards.
  .3 Retain reviewed samples on-site to demonstrate acceptable standard of quality for appropriate on-site surface.

.4 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties and SCAQMD Rule 1113-96.

.5 Provide maintenance data for paint products for incorporation into Operating and Maintenance Manuals specified in Section 01 78 00- Closeout Submittals. Include following:
  .1 Product name, number, type and use.
  .2 Colour numbers.
  .3 MPI Environmentally Friendly classification system rating.

1.4 Quality Assurance

.1 Qualifications:
  .1 Contractor: to have a minimum of five years proven satisfactory experience. When requested, provide list of last three comparable jobs including, job name and location, specifying authority, and project manager.
  .2 Qualified journeypersons as defined by local jurisdiction to be engaged in painting work.
  .3 Apprentices: may be employed provided they work under direct supervision of qualified journeyperson in accordance with trade regulations.

.2 Conform to latest MPI requirements for exterior painting work including preparation and priming.

.3 Paint materials to be highest quality product of an approved manufacturer listed in MPI Painting Specification Manual and to be compatible with other coating materials as required.

.4 Retain purchase orders, invoices and documents to prove conformance with noted MPI requirements when requested by Consultant.

.5 Provide mock-up in accordance with Section 01 45 00 - Quality Control.
  .1 Prepare and paint designated surface, area, room or item (in each colour scheme) to specified requirements, with specified paint or coating showing selected colours, gloss/sheen and textures. Locate where directed.
  .2 Mock-up will be used to judge workmanship, substrate preparation, operation of equipment and material application and workmanship to MPI Architectural Painting Specification Manual standards.
  .3 Allow 24 hours for inspection of mock-up before proceeding with work.
  .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.

1.5 Shipping, Handling and Storage

.1 Refer to Section 01 61 00 – Common Product Requirements.

.2 Deliver and store materials in original containers, sealed, with labels intact. Labels to indicate:
  .1 Manufacturer's name and address.
  .2 Type of paint or coating.
  .3 Compliance with applicable standard.
  .4 Colour number in accordance with established colour schedule.

.3 Provide and maintain dry, temperature controlled, secure storage. Store materials and equipment in well-ventilated area with temperature range 7 °C to 30 °C. Store materials and supplies away from heat generating devices.

.4 Observe manufacturer's recommendations for storage and handling.

.5 Keep areas used for storage, cleaning and preparation, clean and orderly. After completion of operations, return areas to clean condition.

.6 Remove paint materials from storage only in quantities required for same day use.

.7 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling storage, and disposal of hazardous materials.

.8 Remove damaged, opened and rejected materials from site.

1.6 Fire Safety Requirements

.1 Provide one 9 kg Type ABC dry chemical fire extinguisher adjacent to storage area.

.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.

.3 Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code of Canada.

1.7 Waste Management and Disposal

.1 Refer to Section 01 74 19 – Construction Waste Management and Disposal.

.2 Place materials defined as hazardous or toxic in designated containers. Handle and dispose of hazardous materials in accordance with Municipal regulations.

.3 Unused materials must be disposed of at official hazardous material collections site.

.4 Paint and related materials are regarded as hazardous products and are subject to regulations for disposal. Information on these controls can be obtained from the Ministry of the Environment.

.5 Material which cannot be reused must be treated as hazardous waste and disposed of in an appropriate manner.

.6 Place materials defined as hazardous or toxic waste in containers or areas designated for hazardous waste.

1.8 Maintenance

.1 Extra Materials:
  .1 Submit maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
  .2 Quantity: provide one four litre can of each type and colour of finish coating. Identify colour and paint type in relation to established colour schedule and finish system.
  .3 Deliver to Owner and store where directed.

1.9 Ambient Conditions

.1 Heating, Ventilation and Lighting:
  .1 Ventilate enclosed spaces in accordance with Section 01 51 00 – Temporary Utilities.
  .2 Do not perform painting work unless adequate and continuous ventilation and sufficient heating facilities are in place to maintain ambient air and substrate temperatures above 10 °C for 24 hours before, during and after paint application until paint has cured sufficiently.
  .3 Provide continuous ventilation for seven days after completion of application of paint
  .4 Provide minimum lighting level of 323 Lux on surfaces to be painted.

.2 Temperature, Humidity and Substrate Moisture Content Levels:
  .1 Unless specifically pre-approved by Consultant and product manufacturer, perform no painting work when:
    .1 Ambient air and substrate temperatures are below 10 °C.

.2 Substrate temperature is over 32 °C unless paint is specifically formulated for application at high temperatures.
.3 Substrate and ambient air temperatures are expected to fall outside MPI or paint manufacturer's prescribed limits.
.4 Relative humidity is above 85 % or when dew point is less than 3 °C variance between air/surface temperature.
.5 Rain or snow are forecast to occur before paint has thoroughly cured or when it is foggy, misty, raining or snowing at site.

.2 Perform no painting work when maximum moisture content of substrate exceeds 12%.
.3 Conduct moisture tests using a properly calibrated electronic Moisture Meter.
.4 Test concrete surfaces for alkalinity as required.

.3 Surface and Environmental Conditions:
.1 Apply paint finish in areas where dust is no longer being generated by related construction operations or when wind or ventilation conditions are such that airborne particles will not affect quality of finished surface.
.2 Apply paint to adequately prepared surfaces and to surfaces within moisture limits noted herein.
.3 Apply paint when previous coat of paint is dry or adequately cured.
.4 Apply paint finishes when conditions forecast for entire period of application fall within manufacturer's recommendations.
.5 Do not apply paint when:
.1 Temperature is expected to drop below 10 °C before paint has thoroughly cured.
.2 Substrate and ambient air temperatures are expected to fall outside MPI or paint manufacturer's limits.
.3 Surface to be painted is wet, damp or frosted.
.6 Provide and maintain cover when paint must be applied in damp or cold weather. Heat substrates and surrounding air to comply with temperature and humidity conditions specified by manufacturer. Protect until paint is dry or until weather conditions are suitable.
.7 Schedule painting operations such that surfaces exposed to direct, intense sunlight are scheduled for completion during early morning.
.8 Remove paint from areas which have been exposed to freezing, excess humidity, rain, snow or condensation. Prepare surface again and repaint.

PART 2 PRODUCTS

2.1 Materials

.1 Paint materials listed in latest edition of MPI Approved Products List (APL) and from a single manufacturer for each system used are acceptable for use on this project.

.2 Paint materials for paint systems: to be products of single manufacturer.

.3 Only qualified products with E2 or E3 "Environmentally Friendly" ratings are acceptable for use on this project.

.4 Use only MPI listed ‘L’ rated materials.

.5 Paints, coatings, adhesives, solvents, cleaners, lubricants, and other fluids, to be as follows:
.1 Be water-based water soluble water clean-up.
.2 Be non-flammable biodegradable.
.3 Be manufactured without compounds which contribute to ozone depletion in upper atmosphere.

.4 Be manufactured without compounds which contribute to smog in the lower atmosphere.
.5 Do not contain methylene chloride, chlorinated hydrocarbons, toxic metal pigments.

.6 Water-borne surface coatings must be manufactured and transported in a manner that steps of processes, including disposal of waste products arising therefrom, will meet requirements of applicable governmental acts, by-laws and regulations including Fisheries Act and Canadian Environmental Protection Act (CEPA).

.7 Water-borne surface coatings must not be formulated or manufactured with aromatic solvents, formaldehyde, halogenated solvents, mercury, lead, cadmium, hexavelant chromium or their compounds.

.8 Water-borne surface coatings and recycled water-borne surface coatings must have flash point of 61 °C or greater.

.9 Both water-borne surface coatings and recycled water-borne surface coatings must be made by a process that does not release:
.1 Matter in undiluted production plant effluent generating a 'Biochemical Oxygen Demand' (BOD) in excess of 15 mg/L to a natural watercourse or a sewage treatment facility lacking secondary treatment.
.2 Total Suspended Solids (TSS) in undiluted production plant effluent in excess of 15 mg/L to a natural watercourse or a sewage treatment facility lacking secondary treatment.

.10 Water-borne paints and stains, recycled water-borne surface coatings and water borne varnishes must meet a minimum "Environmentally Friendly" E2 or E3 rating.

.11 Recycled water-borne surface coatings must contain 50 % post-consumer material by volume.

.12 Recycled water-borne surface coatings must not contain:
.1 Lead in excess of 600.0 ppm weight/weight total solids.
.2 Mercury in excess of 50.0 ppm weight/weight total product.
.3 Cadmium in excess of 1.0 ppm weight/weight total product.
.4 Hexavelant chromium in excess of 3.0 ppm weight/weight total product.
.5 Organochlorines or polychlorinated biphenyls (PCBS) in excess of 1.0 ppm weight/weight total product.

.13 The following must be performed on each batch of consolidated post-consumer material before surface coating is reformulated and canned. These tests must be performed at a laboratory or facility which has been accredited by the Standards Council of Canada.
.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 Mercury is to be determined by Cold Vapour Atomic Absorption Spectroscopy using Technique no. 7471 as defined in EPA SW-846.
.3 Organochlorines and PCBs are to be determined by Gas Chromatography using Technique no. 8081 as defined in EPA SW-846.

2.2 Colours

.1 Colours to match existing and as noted. Ladders to be painted safety yellow.

.2 Selection of colours will be from manufacturer’s full range of colours.

.3 Where specific products are available in restricted range of colours, selection will be based on limited range.

.4 Second coat in three coat system to be tinted slightly lighter colour than top coat to show visible difference between coats.

2.3 Mixing and Tinting

.1 Perform colour tinting operations prior to delivery of paint to site.

.2 Mix paste, powder or catalyzed paint mixes in accordance with manufacturer's written instructions.

.3 Add thinner to paint manufacturer's recommendations. Do not use kerosene or organic solvents to thin water-based paints.

.4 Thin paint for spraying according in accordance with paint manufacturer's instructions. If directions are not on container, obtain instructions in writing from manufacturer and provide copy of instructions to Consultant.

.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.

2.4 Gloss/Sheen Ratings

.1 Paint gloss: defined as sheen rating of applied paint, in accordance with following values:

Gloss Level Category/	Units @ 60 Degrees	Units @ 85 Degrees
G1 – matte finish	0 to 5	Max. 10
G2 – velvet finish	0 to 10	10 to 35
G3 – eggshell finish	10 to 25	10 to 35
G4 – satin finish	20 to 35	Min. 35
G5 – semi-gloss finish	35 to 70	
G6 – gloss finish	70 to 85	
G7 – high gloss finish	> 85	

.2 Gloss level ratings of painted surfaces as specified.

2.5 Exterior Painting Systems

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.1 Steel Doors, Frames and Metal Fabrications:
.1 EXT 5.1D – Alkyd G5 semi-gloss finish over alkyd primer.

.2 Structural Steel at building exterior:
.1 EXT 5.1G Polyurethane, pigmented finish (over epoxy zinc rich primer and high build epoxy).

PART 3 EXECUTION

3.1 General

.1 Perform preparation and operations for painting in accordance with MPI Architectural Painting Specifications Manual except where specified otherwise.

.2 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and application instructions, and data sheets.

3.2 Examination

.1 Investigate existing substrates for problems related to proper and complete preparation of surfaces to be painted. Report to Consultant damages, defects, unsatisfactory or unfavourable conditions before proceeding with work.

3.3 Preparation

.1 Perform preparation and operations for exterior painting in accordance with MPI Maintenance Repainting Manual except where specified otherwise.

.2 Clean and prepare exterior surfaces to be repainted in accordance with MPI Maintenance Repainting Manual requirements. Refer to the MPI Manual in regard to specific requirements and as follows:
.1 Remove dust, dirt, and surface debris by vacuuming, wiping with dry, clean cloths or compressed air.
.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 Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.
.4 Allow surfaces to drain completely and allow to dry thoroughly. Allow sufficient drying time and test surfaces using electronic moisture meter before commencing work.
.5 Use water-based cleaners in place of organic solvents where surfaces will be repainted using water based paints.
.6 Many water-based paints cannot be removed with water once dried. Minimize use of kerosene or such organic solvents to clean up water-based paints.

.3 Clean metal surfaces to be repainted by removing rust, dirt, oil, grease and foreign substances in accordance with MPI requirements and SSPC-SP 6. Remove such contaminates from surfaces, pockets and corners to be repainted by brushing with clean brushes, blowing with clean dry compressed air, or brushing/vacuum cleaning as required.

.4 Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before priming and between applications of remaining coats. Touch-up, spot prime, and apply primer, paint, or pretreatment as soon as possible after cleaning and before

3.4 Protection

.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 such surfaces.

.2 Protect items that are permanently attached such as Fire Labels on doors and frames.

.3 Protect factory finished products and equipment.

.4 As painting operations progress, place "WET PAINT" signs in pedestrian and vehicle traffic areas.

3.5 Application

.1 Apply paint materials in accordance with paint manufacturer's written application instructions.

.2 Brush and Roller Application:
.1 Apply paint in a uniform layer using brush and/or roller of types suitable for application.
.2 Work paint into cracks, crevices and corners.
.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.
.4 Brush and/or roll out runs and sags, and over-lap marks. Rolled surfaces shall be free of roller tracking and heavy stipple unless approved by Consultant.
.5 Remove runs, sags and brush marks from finished work and repaint.

.3 Use dipping, sheepskins or daubers when no other method is practical in places of difficult access and when specifically authorized by Consultant.

.4 Apply coats of paint as continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.

.5 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.

.6 Sand and dust between coats to remove visible defects.

.7 Finish surfaces both above and below sight lines as specified for surrounding surfaces, including such surfaces as projecting ledges.

.8 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.

3.6 Mechanical/Electrical Equipment

.1 Unless otherwise specified, paint exterior exposed conduits, piping, hangers, duct work and other mechanical and electrical equipment with colour and finish to match adjacent surfaces.

.2 Touch up scratches and marks on factory painted finishes and equipment with paint as supplied by manufacturer of equipment.

.3 Do not paint over nameplates.

3.7 Field Quality Control

.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.

.2 Standard of Acceptance:
.1 Walls: no defects visible from a distance of 1000 mm at 90 degrees to surface.
.2 Ceilings: no defects visible from floor at 45 degrees to surface when viewed using final lighting source.
.3 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

3.8 Cleaning

.1 Proceed in accordance with Section 01 74 11 – Cleaning.

.2 Remove paint where spilled, splashed, splattered or sprayed as work progresses using means and materials that are not detrimental to affected surfaces.

3.9 Restoration

.1 Remove protective coverings and warning signs as soon as practical after operations cease.

.2 Protect freshly completed surfaces from paint droppings and dust to approval of Consultant. Avoid scuffing newly applied paint.

End of Section