CAPREIT

Specifications for
Roofing Replacement
at
12188 224 Street, Maple Ridge, BC

Prepared by:
Canadian Apartment Properties REIT

This page left blank intentionally

This page left blank intentionally

The intent of this bid call is to solicit and receive formal offers to perform the following Work:

Project:	Roofing Replacement
Project Address:	**12188 224 Street, Maple Ridge, BC**
Owner:	Canadian Apartment Properties REIT 11 Church Street, Toronto, Ontario, M5E 1W1
Contact:	
Email:	

Bids shall be prepared and submitted, and the bidding process shall be administered in accordance with these bidding requirements. Refer to Section 01 11 00, Summary of Work for a summary of the Project, including requirements pertaining to Contract Time.

Contractor is to ensure offers are signed under seal, executed, and dated and are received by Owner located at location indicated below:

Submitted to:	Canadian Apartment Properties REIT
Address:	11 Church Street, Toronto, Ontario, M5E 1W1
Attention:	
Closing Date:	

1.1 SITE MEETING

A mandatory pre-tender site meeting is scheduled on: TBD
All bidders are required to attend. Failure to attend will result in disqualification of the bid.
Bidders shall meet the Owners representative at TBD.

1.2 BID AND CONTRACT DOCUMENTS

Agreement Form.
Definitions:

1. Contract Document: The form of Contract between the accepted bidder and Owner will be a Capreit's Short Form Contract.
2. Bid Documents: The Contract Documents supplemented with Instructions to Bidders, Form of Tender, bid securities, Consents of Surety, and Bid Supplementary Forms identified.
3. Bid, Offer, or Bidding: act of submitting an offer under seal.
4. Bid Price: monetary sum identified in Bid Form as an offer to perform Work.

Availability:

5. Bid Documents may be obtained at office of Owner or at the pre-site tender meeting.
6. Bid Documents are made available only for purpose of obtaining offers for this project. Their use does not confer license or grant for other purposes.

Queries/Addenda:

7. Addenda may be issued during Bidding period. Addenda will become part of Contract Documents. Include costs in Bid Price.
8. Verbal answers are only binding when confirmed by written addenda.

1.3 TENDER SUBMISSIONS

The following policy regarding the preparation and submission of tenders will be applicable for this project. Bidders are requested to adhere to the instructions concerning submissions.

1. The Tender must be emailed to the Owner's representative within the time and date specified in the submission requirements.

The Bidders must:

- Complete and fully execute the Form of Tender and Appendices supplied in all respects with appropriate documents and all requisite information.

- Provide on their company letterhead a preliminary work schedule indicating the starting date and completion date. The work schedule must include for sufficient delivery time of all products and materials subcontractors, mobilization, demobilization, clean up, etc. The Owner reserves the right to reject bids which do not contain a preliminary schedule.

During the bidding period, bidders may be advised by Addenda of required additions to, deletions from, or alterations to the requirements of the Tender Documents. All such changes shall become an integral part of the Tender Documents and shall be allowed for in arriving at the final Contract Price. Clarifications requested by bidders must be submitted in writing to the Owner no less than five (5) days before the date set for the bid closing. Clarifications, instructions, or explanations will be issued to all Bidders by written addendum prior to the closing of the Bid. The Owner will not be responsible for oral instructions.
Insert, in space provided on Form of Tender, numbers of all Addenda received during bidding period including any bound into Specifications. If no Addenda have been received, insert the word “None”.
Include in your tender all Harmonized Sales Tax and any other applicable taxes or duties.
No announcement concerning the successful Tender will be made until a complete report and analysis is prepared by the Owner’s representative.
The Owner has the right to delete or add any item in the Form of Tender at his/her own discretion.
This Tender is irrevocable and is to continue to be open for acceptance by the Owner for a period of sixty (60) calendar days after the date and time set for Tender submission. The sixty (60) day acceptance period shall commence at midnight at the date of bid closing and shall terminate at midnight of the sixtieth (60^{th}) day thereafter. If the sixtieth (60^{th}) day falls on a statutory holiday, such day(s) shall be omitted from the calculation.
Bids containing changes, erasures, overwriting, whiteouts, cross-outs, or strikeouts, which are not initialed by the Bidder, or alteration of the original documents, will not be accepted by the Owner.
The Owner may request a prequalification statement, CCDC No. 11 Contractor’s Prequalification, from the Contractor prior to any awarding of the Contractor. Any cost associated with the obtaining of the prequalification statement is to be incurred by the Contractor. Please see section 1.15: QUALIFICATIONS INFORMATION AND REQUIRED SUBMITTALS
The owner may, after bid closing time and before contract award, require any Bidder to submit, in a form prescribed by or acceptable to the owner, supplementary information about any aspect of the bidder’s bid which, in the owner’s opinion, is necessary for bid evaluation purposes.
A bidder who has already submitted a tender may submit a further tender at any time up to the official closing time. The last tender received shall supersede and invalidate all tenders previously submitted by that bidder for this contract.
A bid may be withdrawn at any time prior to the stipulated tender closing date and time, provided the request is in the form of a letter received at the office of the owner before the bid closing time.
Bid shall include cost of all permits required (excluding the building permit), royalties, freight, government duties and taxes where applicable. The Contractor shall obtain permits, licenses, certificates, and pay the fees required for the performance of the work, which are in force at the date of bid closing. The cost of the actual permit will be paid for by the Owner for the building permit, but the soft cost associated with obtaining the permit will be the responsibility of the Contractor.

1.4 PROJECT SCHEDULE AND CONSTRUCTION STAGING

Agree to a project schedule with the Owner’s Representative within 5 days of award of contract. Work must commence no later than 60 days of receipt of the purchase order from the owner. If work is not started within 60 days, the owner has the right to cancel the purchase order with no costs associated to the owner.
The facility must remain fully operational during the construction work. Therefore, the contractor must stage the work as necessary to maintain vehicle access for staff, patrons, visitors, emergency response, etc. No more than one (1) vehicle entrance may be closed at any given time during the work. The cost of staging (if any) must be included in the unit bid prices. No entrance doors may be closed or obstructed during normal operating hours.
Provide on their company letterhead a work schedule indicating the starting date and completion date, within 5 days of award of contract. The work schedule must include for sufficient delivery time of all products and materials, subcontractor and trade timelines, start date, mobilization, demobilization, clean up, major milestones in sufficient detail of the critical events and their inter-relationship up to the date of substantial completion, or any other items required for the orderly progress of work to demonstrate the work will be performed in conformity with the Contract Time. The working schedule as amended and agreed upon with the Owner shall become part of the Contract.

1.5 TENDER PROCEDURE

Before submitting a Tender, the Bidder must carefully examine the site of the proposed work, buildings, services (if any) thereon existing site conditions and limitations and ascertain the extent and nature of all conditions affecting the performance of the Work. Non-compliance shall imply acceptance of all conditions.

If the Bidder fails to report any discrepancies, errors, omissions or inconsistencies, etc. to the Owner, the Bidder will be deemed to have accepted all such specifications and drawings, as being accurate and the Owner will not approve any extra charges subsequent to acceptance of the Tender.
Any drawings that may have been included showing dimension are for general information only. Bidders shall obtain or check all measurements or dimensions of the place of work as may be necessary.
Given written notification, accompanying the completed Bid, of all existing conditions that are unsuitable for the Work of the Contract.
Any replies by the Owner to questions and modifications in any other manner than a written Addendum will not be legally binding.

1.6 ACCEPTANCE OR REJECTION OF BIDS

The Owner will disqualify any Bids if the following conditions and inclusions have not been provided:

1. Bids are received at the address given by the date outlined and within the time prescribed therein.
2. Form of Tender is properly signed by an authorized agent of the Bidding firm.
3. Bids received from unsolicited bidders, not submitted by invitation, will not be accepted.
4. Collusion between bidders will be sufficient cause for rejection of all tenders so affected, including any connection, comparison of figures or arrangements with, or knowledge of, any other corporation, firm or person making a bid for the same.

The Owner may disqualify any Bid if the following conditions and inclusion have not been provided.

5. Properly fill out the Form of Tender in words, and numerals; at the discretion of the Owner, bids that are unsigned, improperly signed or sealed, conditional, illegible, obscure, contain arithmetical errors, erasures, alterations or irregularities of any kind may be accepted or declared informal.
6. Include with the Form of Tender, properly filled out, all or any required appendices
7. Informal bids may or may not be considered at the sole discretion of the Owner.
8. Bids that fail to include or to comply with bid security, bonding or insurance requirements may be accepted or declared informal

The Owner has the unqualified right to:

9. accept or reject any Tender or all Tenders without justification and shall not be liable for any expense, cost, loss or damage incurred by any bidder; and
10. waive the formalities in any Tender documents as the interest of the Owner may require; without giving any reasons for such action.

The Owner is not obliged to accept any tender because it is the lowest tender submitted.
Prior to and after contract award, the Owner may negotiate changes to the scope of the Work, the materials, the specifications, or any conditions with the low bidder or any one or more of the bidders without having any duty to advise any other bidder and may allow them to vary their prices as a result of the changes. The Owner shall have no liability to any other bidder, including but not limited to the low bidder, as a result of such negotiations or modifications.
The Owner may also elect not to proceed with the Project.
In the event that fewer than two bids are received, the Owner has the right to either open the bids or return the bids unopened to the Bidders and invite additional Bidders to bid the work.

1.7 INSURANCE

The Owner will maintain and pay for all Risks Property Insurance for the project in accordance with the General Conditions of the Contract.
The Contractor shall provide all other insurance including but not limited to, Automobile Liability and Contractor's Equipment Insurance.
Provide signed "Undertaking of Insurance" on standard form provided by insurance company stating intention to provide insurance to Bidder in accordance with insurance requirements of Contract Documents.
Each policy of insurance maintained by the Contractor (other than automobile collision insurance and the contractors' equipment insurance) shall name the Owner. The Contractor shall provide proof of all required insurance, with an original certificate of insurance pursuant to the Contract in a form satisfactory to the Owner, which shall include an "Additional Named Insured Endorsement" naming the following:

1. Canadian Apartment Properties REIT

The Conditions of all required insurance shall be equal to or exceed those conditions of the Contract.
Provide a valid Certificate of Insurance to the Owner, within 5 working days upon receiving written bid acceptance from the Owner.
Provide a valid W.S.I.B. Clearance Certificate to the Owner, within 5 working days upon receiving written bid acceptance from the Owner.
Neither the Contractor nor any of his Subcontractors shall begin work on the site until all necessary proofs of insurance have been furnished.

1.8 BID BOND (IF REQUESTED BY OWNER)

If owner request then a Bid Deposit in the form of a certified cheque or bid bond made payable to the Owner in the amount of 10% of the Total Contract Price, shall accompany all bids.
The Bid Bond shall be valid for a period of sixty (60) days from the date of the bidding and shall be supplied by a Surety Company licensed to operate in the Province of the Work.
All bonds shall name the Owner as oblige, signed and sealed by the principal (Contractor) and surety.
Cost of Bonds to be included in Bid as lump sum prices.
The successful bidder's bid security will be returned after the delivery of the specified performance security and evidence of insurance and the execution of the Contract. The bid security of all other bidders, after the expiry of this bid process, or without an award of the Contract or after the rejection of all bids will be returned.

1.9 SECURITY AND AGREEMENT TO BOND (IF REQUESTED BY OWNER)

If requested by owner (see above) Each tender shall be accompanied by a letter prepared by a surety company indicating the ability and Agreement to Bond for both

1. Performance Bond, in the amount of fifty percent (50%) of the Contract Price, and
2. Labour and Material Payment Bond, in the amount of fifty percent (50%) of the Contract Price, issued by a recognized surety company doing business in Canada.

The successful bidder shall furnish and pay for a Performance Bond, in the amount equal to 50% of the Contract Price within five (5) working days, upon notification of the award of the Contract by the owner by written acceptance.
The successful bidder shall furnish and pay for a Material and Labour Bond, in the amount equal to 50% of the Contract Price within five (5) working days, upon notification of the award of the Contract by the Owner by written acceptance.
The Bonds shall be submitted for approval prior to the signing of the Contract.

1.10 EVALUATION/TENDER OPENING

The Bids will be reviewed in the office of the Owner and evaluated on the entire bid submission, including work schedules, appendices, base bid, alternatives, past/current performance, subcontractors, etc.

1.11 SITE VISIT AND EXAMINATION

A site visit for the purpose of review of scope of work in advance of tender submissions is not planned. Contractors are advised to visit the site to assess the field conditions and direct any questions regarding the project to the Owner
Each Bidder is responsible to conduct sufficient investigation of the site of the work and obtain all required information about local conditions to be met with during the work, including all physical and labour conditions and administrative practices prevailing, for the full and proper construction of the work and the conditions under which it will be performed. This includes access to and egress from, the obstacles to be met with and the rights and interests which may be interfered with during the construction of the work. This includes any allowances as required for the installation of temporary exhaust, heating and ventilators into and out of the work area. The Owner and their employees will not be held responsible for the bidder's failure to obtain such information as referred to in the Drawings, Specification, and Contract Documents, or any misunderstandings of the terms and conditions to carry out the evident or apparent work.

1.12 LIST OF SUBCONTRACTORS

On the Form of Tender, list the names and addresses of the Subcontractors to be used for the work. If a subcontractor is not listed as part of the bid submission and is used during the work the Owner has the right to stop all work and remove the subcontractor without notice or incurring any additional costs. The bid security will then be retained by the Owner.
The Owner reserves the right to reject any proposed Subcontractors. In the case that a subcontract should withdraw his bid, the substitution of the subcontractor is subject to the Owner's approval.
If the Owner rejects any Subcontractor, the Contractor shall produce a substitute Subcontractor at no increase to the Contract Price and is responsible for all costs incurred as a result of this substitute.

1.13 SUBSTITUTIONS, PRODUCT OPTIONS

The Owner may consider requests for approval of substitutions during the Tender period. Submit information regarding the proposed substitution, including the reason for the change, the benefit to the Owner, manufacturer data sheets, independent test reports, performance differences compared with the specifications, and the amount of credit offered.
Whenever a product is specified by a specific manufacturer, model or serial number, as an "Acceptable Product", comparable manufacturers or products may be considered at a later date. The Contractor will be responsible for any additional costs resulting from the acceptance of the proposed material or equipment, and installation or space requirements thereafter.
Substitutions will be evaluated and approved or rejected by the Owner after Contract award.

Any substitutions by the Contractor, requiring fees for evaluation as deemed necessary by Owner, will be deducted by the Owner from the amounts owed to the Contractor and paid to the Owner.
All submissions for alternate materials must be submitted, in writing, five (5) business days prior to tender closing for review and acceptance.

1.14 ALTERNATIVES

Alternatives, other than those indicated, may be considered in this Contract.
The Owner reserves the right to discuss alternatives with the two lowest bidders to bring the project within budget. An Alternate Bid should contain sufficient description and identification of any such varying products or systems to permit evaluation and review by the Project Manager and the Owner.
Alternate Bids may only be submitted in addition to, and not in substitution of, a Base Bid that complies with the requirements of the specifications or drawings.

1.15 QUALIFICATIONS INFORMATION AND REQUIRED SUBMITTALS

Contractor is working for the Owner or any of its entities must be registered and in good standing with the Contractor Check service.
Contractors not registered with Contractor Check at the time of bid submission shall assume all costs associated with registration with the service and agree to provide and complete all required documentation to register and become accredited with the service prior to the award of any contract work. Registration cost will not be reimbursed.
References for the performance of similar work performed may be requested prior to award of contract. Bidder shall provide, on request, a statement of similar work performed by those persons.
Submit with the bid a resume of the proposed project manager and project superintendent.
Provide Contractor's corporate safety policy and safety record as identified by the CAD-7 or NEER reports (for Ontario), as requested by the Owner and/or Owner prior to the award of the Contract.
Contractor is to provide information on Company, specifically any liens, claims, and disputes at the request of the Owner.
The Owner may request a prequalification statement, CCDC No. 11 Contractor's Prequalification, from the Contractor prior to any awarding of the Contractor. Any cost associated with the obtaining of the prequalification statement is to be incurred by the Contractor.

1.16 TAXES AND DUTIES

The Bidder must make provision in his/her tender to cover the full cost of Federal, Provincial and Municipal Taxes, Permits and Fees.

1.17 AWARD OF CONTRACT

The Owner has up to sixty (60) days after the date of tender closing to notify the Bidder that his/her Tender is accepted. The Contract shall be deemed to be awarded on the date that the Owner advises the Bidder in writing of such award.

1.18 ERRORS AND OMISSIONS

Any representation in this Specifications and attached Form of Tender are furnished merely for the general information of bidders and are not in any way warranted or guaranteed by or on behalf of the Owner and neither the Owner or its employees shall be liable for any representation negligent or otherwise contained in the documents.
In the case of an error in addition, the correct sum of the amounts shown for each tendered item shall be deemed to be the total tender price regardless of the total amount submitted by the Bidder.
Certain assumptions have been made regarding existing conditions, and because some of these assumptions cannot be verified without the expenditure of large sums of additional money or destroying otherwise adequate or serviceable portions of the building, the Owner and the Contractor agree that, the Owner and the Contractor will hold harmless and indemnify the 0wner from and against any and all claims, damages, awards, and cost of defense arising out of the professional services provided under this agreement.

1.19 COST OF TENDERING

Assume responsibility for all costs, expenses, loss, damage and liabilities incurred as a result of or arising out of tendering or out of the invitation to bid. Owner will not be liable in any way.

END OF SECTION

Project:	Roofing Replacement
Project Address:	**12188 224 Street, Maple Ridge, BC**
Date:	

Name of Contractor	
Address:	
Telephone:	
Fax:	
Email:	

Submitted To:	Canadian Apartment Properties REIT
Address:	11 Church Street, Toronto, Ontario, M5E 1W1
Attention:	

We, _____ hereby have carefully examined the site, the tender documents, specifications, Drawings, Schedules and Addenda numbered _____ to _____ as prepared by CAPREIT.

By the submission of this tender to the employer, the tenderer offers and agrees to contract for, execute and complete the works/subcontract works for the tender sum as stated below.

_____

_____ Canadian Dollars

(in writing)

Grand Total: $

in lawful money of Canada, included in which are all applicable Federal and Provincial taxes, custom duties, freight and all other charges, and Harmonized Sales Tax (HST). All Cash and Contingency allowances are included in the Bid Price.

1.1 STATEMENT A: CONTRACT DECLARATION

We hereby abide by the General Conditions of the Short Form Contract, Instruction to Bidders, and hereby offer to perform the Work set forth in the aforesaid documents. We declare ourselves competent to undertake and complete the Work and, hereby offer to enter into a Contract to perform the aforementioned Work.

1.2 STATEMENT B: BONDS (IF REQUESTED BY OWNER)

We have included herewith:

The required Bid Bond and Agreement to Bond as required by the Instruction to Bidders.

A Bid Bond as required in Section 00 21 13 Section 8.1 is included with this Tender.

The cost of the Bid Bond is included in the Tender Price. A bid bond in an amount equal to ten (10%) of the Contract Price is included with the Form of Tender.

A Letter of Agreement to provide a Performance Bond is included with this Tender. We undertake to furnish and pay for a Performance Bond, and a Labour and Material Payment Bond, as specified for the proper completion of the Work. The referenced Bonds are to be issued by a Canadian Company doing business in the Province of Ontario, satisfactory to the Owner, each in the amount of fifty percent (50%) of the Contract Price.

Tenders by Limited Companies must be submitted over Corporate Seal, signed in the name by the duly authorized officers. Tenders by individuals or partnerships must be witnessed.

Bidder's Name: _____

(Print Name) *(Title)*

Authorized Signature: _____

Date: _____ Contractor's Seal:

Witness: _____

(Print Name) *(Signature)*

1.3 STATEMENT C: GENERAL

Part 1 – Unit Prices

1. We agree to do extra work or to delete work as the Owner or Appointed Representative may require under this Contract before and/or after the Contract is awarded without penalty, with increases to or reduction in the Tender Price corresponding to the amount of said extra work or deleted work multiplied by the appropriate unit price items given in the Schedule of Quantities. The unit prices include all costs, taxes, overhead, profit, and exclude the value added taxes. The estimated quantities below are approximate and serve to establish the Estimated Contract Price.
2. The Owners assume no responsibility for the accuracy of the estimated quantities shown, which are to be used in establishing the Estimated Contract Price for each part and section of the work only. Accurate quantities for portions of the Contract cannot be pre-determined; they will be established as part of the Work to determine the cost and/or credit for the Contract Price for each part and section of the work based on actual field measurement determined by the Owner during the course of the work.

Part 2 – Lump Sum

3. The Contractor shall verify for himself, through a careful examination of the site, the extent of the work related to each of the items of work for which lump sum prices are required.

Part 3 – Valuation of Changes

4. Additional work required by the Owner and performed by the Contractor and/or subcontractors, and not covered by the unit prices, will be based on net cost of labour and materials plus 10 percent for overhead and plus 5 percent for profit. For any such work performed the specified overhead and profit shall be paid only once.
5. A complete breakdown of labour and materials costs for all changes will be submitted by the Contractor for approval by the Owner or Appointed Representative.

1.4 STATEMENT D: LIST OF SUBCONTRACTORS

We hereby acknowledge the following:

The Bidder will list hereunder the names of all Subcontractors intended to be used in the execution of this Work subject to the approval of the Owner or Appointed Representative.
All work not performed directly by the Bidder's forces shall be included in this List of Subcontractors. Unless this list is properly completed, the Tender may be rejected. It is understood by the Bidder that the following List of Subcontractors is complete and that no addition or substitution to this list will be permitted after the closing date of Tenders, unless approved by the Owner or his representative.

SUBTRADE	**PROPOSED SUBCONTRACTOR OR SUPPLIER**	**PROPOSED SPECIFIED PRODUCT OR MATERIAL**
Roofing		
Metal flashing		
Mechanical		
Electrical		
Others		
Proposed Material (Subject to approval by Owner)		

Reason for Material Variation and Cost Impact, if any:

1.5 STATEMENT F: BID AGREEMENT

By submitting this bid, the Bidder agrees that:

This bid is made without any connection, comparison of figures or arrangements with, or knowledge of, any other corporation, firm or person making a bid for the same Work except for prices submitted for subcontracts and is in all respects fair and without collusion or fraud.
This bid will be left open for acceptance for a period of sixty (60) days from the date of closing, or until the formal Contract with the Owner is executed.
The drawings and specifications have been examined and there are no materials or methods indicated to which the Bidder objects or for which the Bidder would be unwilling or unable to accept responsibility and will notify the Owner before award of the Contract otherwise.
The Bidder agrees that after signing the Contract, full responsibility for the performance of the Work will rest with the Bidder and the Owner is in no way to be held liable.
In submitting this bid, we recognize the right of the Owner to accept any bid at the price submitted, or to reject all bids without stating reasons therefore, and the lowest or any tender will not necessarily be accepted.
We undertake and hold ourselves ready, upon the acceptance of our bid, to enter into a Contract with the Owner for due execution and completion of the Work based on the Short Form Contract, with amendments including Supplementary Agreement and Supplementary General Conditions, within 5 days of written notification of acceptance of this Bid.
We agree to start the Work within _____ weeks(s) of receiving written notice of the Contract Award and to attain Substantial Performance of the Base Bid Work in accordance with the Contract Documents with _____ week(s) of commencing the Work, assuming no weather delays.
We agree to provide the Owner before commencing Work, the names and telephone numbers of staff members that will be directly responsible during the course of work, including Site Superintendent, Project Manager, Site Foreman, and all additional personnel as may be required.
This bid is made without any connection, comparison of figures, arrangements with, or knowledge of, any other legal entity or person, other than the bidder has an interest in the bidder's tender making a bid for the same Work, except for prices submitted for subcontracts, and is in all respects fair and without collusion or fraud.
Execute the 'Agreement' within five (5) days of receipt of the form of execution.
We agree to provide a valid Certificate of Insurance to the Owner, within 5 working days upon receiving written bid acceptance from the Owner.
We agree to provide a valid W.S.I.B. Clearance Certificate to the Owner, within 5 working days upon receiving written bid acceptance from the Owner.
We agree to furnish and pay for a Performance Bond, in the amount equal to 50% of the Contract Price within five (5) working days, upon notification of the award of the Contract by the owner by written acceptance – if requested by the owner
We agree to furnish and pay for a Material and Labour Bond, in the amount equal to 50% of the Contract Price within five (5) working days, upon notification of the award of the Contract by the owner by written acceptance. - if requested by the owner
We agree to provide all submissions for alternate materials must be submitted, in writing, five (5) business days prior to tender closing for review and acceptance.
We agree to a project schedule with the Owner's Representative within 5 days of award of contract.

_____

(INSERT COMPANY LEGAL NAME)

_____

(AUTHORISED SIGNATURE) *(PRINT NAME)*

1.6 STATEMENT G: CONTRACT WORK SCHEDULE OF ESTIMATED QUANTITIES AND PRICES

We hereby agree to carry out the following work, using the subcontractors listed in STATEMENT D:

Item No.	Description	Unit	Estimated Quantity	Unit Price	Amount
1.	On Main Flat Roof Areas (*Roof Section* ***#100, 200, 300, 400 and 500*** *on the Drawings*): Supply all materials, labour, and equipment required to remove and dispose off-site all existing roofing components/assembly down to existing roof deck and install **new TPO** conventional roofing assembly and all associated components, as per Summary of Work and as specified. This item also includes replacement of all roof accessories including, but not limited to, roof drains, stack jackets, vent cones, pitch pockets, prefabricated flashings at all curbs, penetrations, pipings, etc., duct/pipe/gas-line/cable tray supports, walkway pavers, metal flashing, metal counterflashing, metal cap flashing, sealant, etc.	ft^2	14,625	$	$
2.	On All Roof Areas: Supply all materials, labour and equipment required to disconnect and reconnect all mechanical and electrical equipment, including lifting of equipment as required to complete the roofing work, and testing of all equipment to the satisfaction of the owner.	Lump Sum	N/A	N/A	$
3.	Supply all labour, materials, and equipment necessary to replace remove damaged and/or deteriorated wood decking, and replace with new exterior grade plywood sheathing to match existing. Board size to be no larger than 1.2m x 2.4 m (4' x 8'). Cut new plywood as required at perimeters and projections. Only complete these repairs if approved by Owner.	ft^2	400	$	$
4.	Submit shop drawings from the manufacturer for the new tapered insulation showing all drains, slopes at perimeter and around drains.	Lump Sum	N/A	N/A	$
5.	On all roof sections (where required). Build roof curbs to accommodate the new roofing system thickness to have 8” clear height above the roof finish level.	Lump Sum	N/A	N/A	$
6.	Supply all labour, materials, and equipment necessary to replace the existing roof hatch as per Summary of Work, including building required curb to have the opening minimum height 12” from finished roof level.	Each	2	$	$
7.	Mobilization/Demobilization of personnel and equipment on site.	Lump Sum	N/A	N/A	$

Item No.	Description	Unit	Estimated Quantity	Unit Price	Amount
	This item includes all other overhead Items (***where needed***) such as (Site Safety, Shoring, Hoarding, Signs, Lights, Administration, Hydro Protection, Other Permit Application (street permit, Hoarding permit etc.), Coordinating inspections by authorities having jurisdiction, etc.				
8.	Allowance for electrical and mechanical repair work and for necessary field and laboratory testing as approved by Owner's representative.	Cash allowance	N/A	N/A	$5000.00

Sub-Total $ _____

H.S.T. *(based on Sub-Total)* $ _____

Grand Total
(to be shown on Page 1 of Form of Tender) **$** _____

1.7 STATEMENT H: NOTES REGARDING PAYMENT OF WORK

We hereby acknowledge the following:

- All repair areas will be marked out by a Project Manager from CAPREIT. Payment will be based on the measured quantities.
- Wherever items are paid by the tonne, CAPREIT will require the weigh tickets. Tickets will only be accepted on the same day that material was placed at the site.
- Any request for extras must be submitted in writing to CAPREIT. Extra work must be approved by the owner in writing.
- The Owner reserved the right to award some, part of none of the work at their discretion.
- Any items not specifically mentioned in the description for base items, but detailed in the Drawings, Specification and/or found to be required to complete the work as described in the Drawings and/or Specification will be included in the prices listed.
- Costs above include co-ordination of all locates to determine location of all services necessary to perform work.
- The above quoted prices include the specified cost, overhead, profit and applicable taxes in force at date of tender, with the exception of H.S.T.
- In the event of discrepancy between the written text and numeric summary on the Bid Breakdown Table, the written text representing the total cost of the project will govern.
- All cash allowances are to be used only on written instructions from the Owner and are to include applicable taxes as specified in General Conditions of the Contract.
- The Contractor shall make payment only for actual charges for all cash allowance items, at the rate for work performed during normal business hours. The cash allowances shall not include overhead or profit.
- The Contractor shall not charge for non-productive time or periods of standby by the Contractor or the Contractors' forces.
- The Contractor is to use testing companies verified by Owner for all cash allowances.

(INSERT COMPANY LEGAL NAME)

(PRINT NAME) *(AUTHORISED SIGNATURE)*

END OF SECTION

This page left blank intentionally

GENERAL

1.8 GENERAL SCOPE OF WORK

1. Accept instructions only from the Owner and/or sources designated by the Owner.
2. The building shall remain in use in areas not immediately affected by the work. Ensure that normal building operations and maintenance may be carried out without disruption, except as otherwise noted herein or stated in the Bid.
3. Comply with the most current requirements of the most current versions of the Federal and/or Provincial Building Codes and all the local, municipal and provincial by-laws ad ordinances and required where the work is located. All Standards referred to shall be the current editions as amended at the date of issue of Contract Documents.
4. Except where specified otherwise, all Sections of Division 1 – General Requirements shall apply to the work of all Sections of the Specifications.
5. Comply with the most current requirements of the Occupational Health and Safety Act, and Regulations for Construction Project as stipulated in the Federal, Provincial, Municipal requirements where the work is located.
6. Perform daily and final clean-up of the work area and surrounding areas of the site. Accumulation of debris is unacceptable.
7. Temporary barriers, enclosures and signage will be highly enforced given the use of property.
8. The Contractor shall ensure the safety and proper execution of public routing; ensuring temporary access to fire exists if and when they are affected as part of the work.
9. Obtain Construction/Building Permit and all related permits, including sidewalk/roadway occupation permits as required by the local municipality.
10. Determine the nature and extent of all site services above and below grade prior to commencement of work.
11. Coordination of trades will be the responsibility of the Contractor to ensure the work is completed as soon as possible. Provide winter protection and heat as required to perform the work if required and as specified.
12. Supply, set-up, maintain and remove scaffolding, man lift platforms and/or swing-stages during the performance of the work as required to access the work areas. If scaffolding is to be used, the Contractor shall provide complete shop drawings bearing the seal of a Professional Engineer, licensed to practice in the province of work. Work shall include review and approval of installed scaffolding by designer. Allowance should be made for access to all elevations of the building.
13. No public access to the work area shall be allowed. Ensure access to fire exits is maintained and hoarded through the work area. Pedestrian access along sidewalks must be maintained as per Owner's requirements. No areas of access to or around the building, including terraces, are to be restricted without the approval of the Owner and local authorities.
14. Install temporary protection at all locations of work, as required to ensure safe, clean, orderly removal and disposal work and to provide protection for all interior and exterior building components, vehicles, pedestrians and occupants.
15. Provide temporary support to existing structural and cladding components during performance of work (as required).
16. Install temporary protection for all materials and building components, which have been exposed during demolition/removals as specified.
17. Dispose of all materials at landfill site authorized by authorities having jurisdiction.
18. Weather conditions are considered incidental to the Work and will not be considered additional to Bid Price.
19. Contractor's employees must be certified for the installation of specified materials.
20. Contractors shall meet all Ministry of Labour requirements for completing the work. The Contractor shall be responsible for all site safety. The Owner and the Owner shall not be responsible, in any way or any site safety, for the methods the Contractor uses to complete the work detailed in this specification.
21. The Contractor shall file a notice of project with the Ministry of Labour. The Contractor shall enforce proper work methods and act immediately on directions regarding safety and work practices given by authorities having jurisdiction. Failure to comply with instructions or orders from the Ministry of Labour or other authorities regarding safe work practices or provision of specified requirements under the Act shall be considered non-compliance with the Contract. Ensure that all personnel are equipped to comply with safety regulations detailed in the Act.
22. All existing entrances to the building shall be protected as required. Access and exits to the building must be maintained accordingly throughout the progress of the work.

23. Storage of materials and equipment must be arranged with the building's management.
24. Prevent accumulation of dust, fumes, vapours and gases in areas of work and within the building itself.
25. Perform daily and final clean-up of the work area and surrounding areas of the site. Accumulation of debris is unacceptable.

Roof Top Equipment/Systems:

26. The Contractor is to provide a Mechanical Equipment Report from a licensed tradesman, describing the current working condition of all mechanical equipment that they are required to work on and submit their findings to the Owner. This includes but is not limited to the power and control wiring, gas, plumbing, and exhaust components. Provide a certificate from a licensed trade person confirming the equipment condition and any issues of concern.
27. Provide the necessary labour and materials to allow for the modification of all systems located on the roof as required to undertake the re-roofing work, or as indicated on the drawings and details. The Contractor shall be responsible for all modifications with coordination with GTAA site service contractors. These modifications will include but are not limited to natural gas piping systems, plumbing systems, electrical systems and mechanical systems.
28. Disconnecting and reconnecting exhaust fans, gas lines, cabling, telecommunication including masts, and roof top equipment, as required to modify the equipment or raise and/or flash curbs.
29. Temporarily relocating several mechanical units, such as ducting and Air Handling Units (HVAC). Where required the contractor is also responsible to modify ducting to suit new height of mechanical units.
30. Re-installing all mechanical units that have been temporarily relocated.
31. Verify that any modified systems (including power and controls) are in proper operations and have been certified by respective trades before leaving the site at the end of each day and/or prior to demobilizing from the site.

Roof Drainage System:

32. The Contractor will be solely responsible to confirm the condition of the existing roof drainage system from the roof drain to a point 2.4 m (8') past the drainpipe elbow prior to commencing any work. The Contractor is to provide unambiguous Roof Drainage Report documenting any existing problem(s) with the roof drainage system, (drains, gutters, connections, hangers, downpipe) including but not limited to damaged or leaking components, obstructions, or blockage of the drainpipe prior to undertaking any roofing work. Any defects discovered after roofing operations have begun, which were not previously documented and submitted to the Owner, will be deemed to be as a result of the Contractor's actions. This item is only applicable where drain piping is not replaced.
33. The Contractor will be solely responsible to ensure that the roof drainage system (drains, gutters, connections, hangers, and downpipes) is in acceptable working condition once all site work is completed. Any deficiency uncovered prior to the acceptance of all work (total completion) by the Owner will be construed as the result of the Contractor's actions. Repairs will be carried out to the Owner's satisfaction and may be subject to a charge back against the contract
34. The Contractor will be responsible to undertake a water test of each individual roof drain immediately after the roof drain has been roofed in and flashed. The Contractor will arrange for the Owner to be present to witness the water test.
35. At completion of work, perform final floor test and have witnessed by Owner.

1.9 SCOPE OF WORK – ROOFING REPLACEMENT ON ALL ROOF SECTIONS (100, 200, 300, 400, & 500)

1 Weather protection and enclosures (if required) are to be included in this item and will not be considered as an additional cost after award of the project. Provide weather protection for building components exposed during demolition or removal, and/or protection and heat as required to perform the work as specified.

2 Existing Main Roof System and Area

- Existing Roof section # 100 is a Modified Bitumen Roof = 4,100 ft^2
- Existing Roof section # 200 is a Modified Bitumen Roof = 3,550 ft^2
- Existing Roof section # 300 is a Modified Bitumen Roof = 6,215 ft^2
- Existing Roof section # 400 is a Modified Bitumen Roof = 690 ft^2
- Existing Roof section # 500 is a Modified Bitumen Roof = 54 ft^2

3 Remove all existing roofing components (including all flashings, membranes, insulation, etc.) down to existing roof deck and install a new roof assembly as outlined below and as specified. **Do not stack/store material and debris in large piles on the roof that could affect the structural integrity of the roof.**

Supply and install new roof assembly at all five roofs (**Sections #100, 200, 300, 400 and 500**) composition of new roof shall be (bottom to top):

1. Existing roof deck

2. Install one (1) ply of vapour retarder over the prepared and primed roof deck as specified.

3. Tapered rigid Insulation. Install closed-cell polyisocyanurate foam core integrally bonded to inorganic coated glass facers insulation boards. Butt sheets tightly together with end joints staggered by half the width of one sheet. Insulation to be installed as follows:

    1. Base insulation: Two (2) layers of 3.0” thick (total R-Value 30) on Main Roof (section # 100, 200, 300, and 500)
    2. Base insulation: One (1) layer of 3.0” thick (minimum R-Value 15) at mechanical penthouse roof (**section #500**)
    3. Tapered insulation: The tapered insulation to have a slope of 2%.

    Submit shop drawings prepared by a tapered insulation manufacturer consistent with the suggested tapered insulation plan at locations where shown in the drawings.

4. Install one (1) overlay/cover board in accordance with manufacturer written instructions.

5. Install TPO (80mils) roofing membrane in accordance with Section 07 54 23 and manufacturer written instructions. Specified roofing membrane are from Johns Manville and Elevate (formerly Firestone). Alternative membrane system/manufacturer must be pre-approved by the Owner at the tendering stage prior to pricing the work.

6. The Contractor shall provide the Owner with twenty (20) year Manufacturer's Labour, Material and Workmanship System Warranty.

7. Install new retrofit drains with new control flows at all existing drain locations on the roof as specified.

8. Provide new carpentry at the roof parapets and curbs as required to replace damaged and/or deteriorated wood. The perimeter roof parapets and curbs are required to rise above the finished roof to the minimum height of 203 mm (8").

9. Supply and install new expansion joint, as required and detailed in accordance with roofing manufacture instructions.

10. Install new 26-gauge prefinished metal cap flashing and counter flashing at upturn locations, curbs, and roof parapets as specified with S-locks. TPO coated metal flashing to be used where membrane overlap is required and in accordance with manufacturer written instructions. Colour shall be selected and approved by the Owner.

11. Install metal flashing at all roof penetrations as specified.

12. Clean, prime, and paint all gas pipelines (where present) on the roof with new yellow corrosion inhibiting paint where applicable.

13. Remove all existing gas line supports and replace with new gas line supports as specified.

Mechanical and Electrical Services:

1. Disconnect and reconnect all mechanical and electrical equipment, including lifting of equipment as required to complete the roofing work, and testing of all equipment to the Owner's satisfaction.

2. Coordinate with the building owner to disconnect all electrical conduits, cables and/or antenna on the roof as required to complete the roofing work, and coordinate with the building owner to reconnect and test all equipment to the Owner's satisfaction.

Precast Pavers

1. Remove existing (if present) pre-cast concrete pavers and store at a safe location for re-installation at the existing locations after the roofing work is completed. All precast concrete pavers shall have membrane protection pad (i.e., 25 mm (1") thick rigid insulation boards) between the pavers and the roof membrane.

2. The Contractor shall replace any damaged pre-cast concrete paver due to removal at no extra cost to the Owner.

1.10 WORK COVERED BY CONTRACT DOCUMENTS

- Accept instructions only from the owner and/or sources designated by the Owner.
- The building shall remain in use in areas not immediately affected by the work. Ensure that normal building operations and maintenance may be carried out without disruption, except as otherwise noted herein or stated in the Bid.
- Comply with the most current requirements of the most current versions of the Federal and/or Provincial Building Codes and all the local, municipal and provincial by-laws ad ordinances and required where the work is located. All Standards referred to shall be the current editions as amended at the date of issue of Contract Documents.
- Except where specified otherwise, all Sections of Division 1 – General Requirements shall apply to the work of all Sections of the Specifications.
- Comply with the most current requirements of the Occupational Health and Safety Act, and Regulations for Construction Project as stipulated in the Federal, Provincial, Municipal requirements where the work is located.

1.11 DOCUMENTATION, CO-ORDINATION AND INSPECTIONS

- The Contractor shall keep on site a copy of the Specifications, Contract Drawings, WHMIS data sheets, Safety Policy and Procedures, Permit, Permit Drawings, Shoring Drawings, Documentation substantiating work, Field Tests and Inspections reports, all relevant product date sheets, proof of WHMIS training for all site personnel, change orders, and any additional amendments and/or relevant information as required by the regulating municipal and federal standards.
- The Contractor on a daily basis shall keep an accurate account of weather conditions, work performed, and labour force. At no time is the labour force to be below the provided force in the schedule.
- All work shall be inspected and accepted on behalf of the Owner. The Contractor is required to co-operate with and provide samples to the Owner. The Contractor shall give the Owner 24 hours advance notice for inspection services.
- Coordination of trades will be the responsibility of the Contractor to ensure the work is completed as soon as possible. Provide winter protection and heat as required to perform the work if required and as specified.
- Contractor's employees must be certified for the installation of specified materials.
- The Contractor shall be responsible for payment of costs if the work is not ready when stated and if the Owner and inspection and testing agency are not given sufficient notice of such delay.
- The Owner reserves the right to deduct from the Contractor amounts for extra inspection and testing by the Owner as required for certification of payment of work done to repair a deficiency; the right to retain independent inspection companies to confirm compliance by the Contractor to the Contract Documents.
- The Contractor is solely responsible for notifying and ensuring that the proper municipal inspector, as required by the Inspector, is present to complete a review or follow-up review of any project component the local

municipal authority requires, including any associated costs for these inspections or inspections thereafter to correct disparities and deficiencies required.

- The Contractor shall be aware that the breakdown of the specification into sections does not represent any actual division of the work. Be responsible for coordination between items of work which would be covered under separate specification sections. Coordinate and be responsible for the work of the various sub-trades.
- The Contractor is to attend at least one week prior to start of work a construction co-ordination meeting to discuss the work. The meeting time will be determined by the Owner and /or Owner's representative at a mutually agreeable time and place and is to include the Contractor's Project Manager and Site Superintendent, Owner and /or Owner's representative. A regular site meeting on site with the same personnel is to be held bi-weekly or as agreed upon with the Owner and /or Owner's representative to review progress of work and concerns.
- All work shall meet or exceed the more stringent of the manufacturer's requirements or the requirements of this Specification, including sections within.

1.12 WORKING HOURS

- Work shall be allowed from 8 a.m. to 5 p.m., Monday to Friday. The work shall be performed according to the start date and duration given in the Bid Document. Saturday and Sunday work is permitted with the approval of the Owner. Noise making activity is not permitted on Saturday, Sunday, and Statutory Holidays.
- Any work beyond the aforementioned work hours is subject to approval by the Owner, with a request to be provided by the Contractor to the Owner for an extension in the working hours, provided that it does not result in excessive noise, odours, or disruption. Complaints from municipal and federal authorities, tenants, and management are reasonable grounds for discontinuance of extended working hours.

1.13 PROTECTION OF WORK AND PROPERTY

- Provide interior barricading and exterior fencing as per specification drawings.
- All fire protection measures shall have the approval of the authorities having jurisdiction.
- Provide and maintain fire extinguishers as required on the site, for the protection of the building.
- The Contractor is to provide adequate protection of materials and work from damage and staining by weather and other causes and ensure that all new work to be damaged is protected at the end of the day's work. The Contractor is to protect adjacent materials work of other trades to prevent damage, and all portions of the buildings affected by work, and all damage, soiling, and staining occurring during the progress of work, until the work is completed, and will be required to be made good at no additional cost to owner. This includes damage caused or clean-up required by dispersion of dust generated by the work.
- The Contractor is to maintain all life safety during the course of work. This includes the location of the fire sprinkler and any alarms prior to commencing repair work, such to prevent disruption or interruption. It is the Contractors responsibility to notify the owner in writing of any disruption seventy-two (72) hrs in advance in writing. Any claims resulting from the damage shall be the Contractors responsibility.
- Before commencing work, inspect all building components within the area of the work, such as drains, lights, etc. A written deficiency list documenting the items is to be submitted if there is existing damage, or if items are not functioning. This provision is for the mutual protection of the Contractor and the Owner. Any existing deficiency not recorded in the report will result in the Contractor being required to make good such deficiency at his own expense after the completion of work. The Contractor will be responsible to make good all items noted to be damaged and/or not functioning after the work which was not recorded prior to the work. This includes for correction of deficiencies paid for the owner, cost for time of Owner and/or Owner for costs incurred as a result of lack of response by the Contractor to arrange details of compensation. The Contractor is to protect from damage due to construction activities of all existing finishes, services, structural elements and equipment to remain. Make good damage at no expense to Owner.
- The Contractor shall assume all responsibility for any damage resulting from the use of the building's drainage system to dispose of construction water irrespective of the drain system condition.
- The Contractor is to ensure the building envelope is made water-tight, to prevent interior leakage prior to adverse weather as a result of the work in the affected area, and at the end of each day. Make good damage at no expense to Owner.

1.14 TEMPORARY HEATING AND VENTILATION

- The Contractor shall provide all required ventilation as required to ensure that the air quality within the building and areas of work conforms to applicable codes and standards.
- Before commencing work, identify all paths for dust, fumes or odours generated by the work to penetrate interior spaces (hydro vault, exhaust openings, door penetrations, etc.) to an acceptable level, as directed by

the Owner. The Contractor shall comply necessary with laws, ordinances, rules, and regulations relating to this work to mitigate against dust, fumes or odour ingress.

- The Contractor shall pay for temporary heat and ventilation used during construction, including cost of installation, fuel, operation, maintenance, and removal of equipment. Use of heater type shall be approved by Owner, including any waste discharge into work areas.
- The Owner may request the Contractor to furnish and install temporary heat in enclosed areas, as required to facilitate progress of work, prevent moisture condensation, protect work and products against dampness and cold, etc. as deemed necessary by Owner.

1.15 USE OF SITE

- The Contractor assumes full responsibility for safely maintaining existing building site conditions when performing the work, the Owner and Owner will not be held responsible in any way for site safety for the methods of the Contractor to carry out work as detailed in the specification.
- The Contractor shall file a notice of project with the Ministry of Labour and meet all safe work practices given by authorities having jurisdiction. Failure to comply with instructions or orders from the Ministry of Labour or other authorities regarding safe work practices or provision of specified requirements under the Act shall be considered non-compliance with the Contract. Access to work areas shall be limited to workers and parties associated with the work only.
- Maintain all emergency and service access routes always clear, ensuring temporary access to fire exits if and when they are affected as part of the work. Provide barricades and signs necessary to always direct vehicular and pedestrian traffic around construction areas such as to allow unimpeded safe passage to and from the buildings and adjacent sidewalks and routes. Do not close or obstruct nor store materials in roadways, sidewalks, or passageways without approval by Owner. The Contractor shall implement safety/instruction signs and notices as required, posted in accordance with the current Codes and local and municipal by-laws, no signs or advertising shall be permitted on site.
- Do not use or access roof areas not included in the work.
- The Contractor is responsible for the protection and safety of the general public and workmen in accordance with the current edition of the Occupational Health and Safety Act and Regulations for Construction Projects. This always includes protection and safety of all pedestrians and vehicles in the work area and is to provide all necessary signs, barricades, and guardrails as required to ensure the safety of the general public and the workmen. No actions or lack of action by the Owner or Owner shall be deemed to be an instruction related to safety of the workplace.
- All notification of site safety of the sub-contractors and staff is the responsibility of the Contractor, this in addition to any, as per the Contractor's role as "Constructor" under the Occupational Health and Safety Act or such other similar legislation applicable to the Work in force in the Province in which the Work is being undertaken and with the Contractor's safety programs and procedures in force at the Place of the Work to the extent the Contractor informs the other contractors in writing of such safety programs and procedure. This includes responsibility of workers and their activities while on site.

1.16 PROGRESS OF WORK AND SCHEDULE

- A work schedule is to be provided within five (5) days from the award of the Contract, indicating the work duration, milestones, etc. The project schedule is to include the size of the workforce on the project schedule. The schedule is to be reviewed with the Owner, in consultation with the Contractor if necessary.
- The Contractor is to monitor compliance with the contract schedule on an ongoing basis and document all deliverables, milestones, trade schedules, etc. This includes a revised schedule to be provided in the event there are delays because of an increase in scope of work, increased work as a result of increase in quantities exceeding fifteen (15) percent of the estimated quantities, unseen weather delaying the work schedule, or any items that may impact the schedule as deemed necessary for the completion of the project in a timely manner within the date of substantial completion.
- The Owner at any time, may request the Contractor to increase labour force, equipment, or work additional hours as they may think necessary to meet the provided schedule under the terms of the Contract, at no additional cost to the Owner. Should the Contractor fail to comply with the order, the Contractor shall be considered to be in default of the Contract.

1.17 COMPLEMENTARY DOCUMENTS

- Drawings, specifications, and schedules are complementary each to the other and what is called for by one to be binding as if called for by all. Should any discrepancy appear between documents, which leave doubt as to the intent or meaning, abide by Precedence of Documents article below or obtain direction from the Owner.

- Examine all discipline drawings, specifications, and schedules and related Work to ensure that Work can be satisfactorily executed. Conflicts or additional work beyond work described to be brought to attention of Owner.
- When site conditions require reasonable changes to the drawings, obtain the Owner's approval prior to making such changes.

1.18 APPLICABLE LAWS, REGULATIONS AND STANDARDS

- The Contractor is responsible for obtaining and paying for all building permits, street permits, power line protection, damage deposits, etc., as required. Obtain Construction/Building Permit and all related permits, including sidewalk/roadway occupation permits as required by the local municipality.
- Determine the nature and extent of all site services above and below grade prior to commencement of work. All utilities and services shall be protected against dame or interruption. Any claims resulting from damage shall be the Contractor's responsibility.

1.19 TEMPORARY FACILITIES

- Provide and maintain, in compliance with Provincial statutes and local by-laws, sanitary temporary toilets and washbasins for the use of the workers on the project.
- The existing electrical service may be used as a temporary service for lighting and the operation of electric pumps, motors, vibrators and other handheld power tools during the construction period, however connection costs required for all other equipment is to be incurred by Contractor, with written permission by owner and provided that there is sufficient capacity. Any temporary services installed are to be removed upon completion of the work at no cost to the Owner if installed to meet the capacity.
- Water for construction purposes will be provided from the Owner's existing facilities. The Contractor is not use water from the fire system or any procedures that may activate the fire alarm, unless provided written permission from Building Operations and or Property Manager.

1.20 MATERIALS AND EQUIPMENT

- Deliver all materials to the site in their original unopened containers or wrappings, with labels and seals intact, and stored in dry, secure, and protected area, in accordance with manufacturer's written requirements. This includes heated storage to conform to manufacturer's recommended temperature.
- All storage areas are to be at locations approved by Owner within site boundaries, in a location to prohibit vandalism and unauthorized use. The Contractor is responsible for the security of all materials and equipment, the Owner will not be responsible for any claims resulting for any theft or damage.
- The Contractor is to verify, where applicable, the material expiry dates delivered on site. Immediately notify Owner and dispose of all materials away from the site past the expiry date or not specified.
- Store all materials and equipment which will not exceed the maximum design loads and overload the structural elements.

1.21 WASTE MANAGEMENT

- Provide and pay for storage and removal of garbage, as necessary, during the course of work, including approval of storage locations prior to the commencement of work from the Owner. This includes separation of different waste streams and salvaged materials, prior to the disposal / delivery to local waste management facility.
- All waste streams and salvaged materials, unless otherwise noted, is the responsibility of the to dispose of in a timely manner, to prove a clean work environment, in accordance with Occupational Health and Safety Act and Regulations for Construction Projects.

1.22 DEFICIENCIES AND PROJECT COMPLETION

- For any deficiencies in the work, the Contractor shall submit a written proposal for the repair of the deficiency. If engineering design is required, a qualified Professional Engineer shall be engaged by the Contractor. All testing required shall be paid for by the Contractor.
- Clean site of all materials and debris created by the Construction including all required power wash all ceilings, walls and floors adjacent to the work of dust and materials generated during the work. Remove all caulking, paints, cementitious material, or the like from windows using apparatus and cleaning materials and clean manufactured articles in strict accordance with the manufacturer's directions in each case. All work, new, or existing, damaged during cleanup shall be repaired at the Contractor's expense. This includes any flushing of drains, and power washing of interior slabs.

- The Contractor is to provide written acceptance from the utility companies confirming their review and acceptance of the reinstatement and make good of services following the completion of work.
- The Contractor will attend a deficiency walkthrough identifying items, to be noted by Owner of incomplete and items requiring further remedial work to satisfy the terms of the Contract. The owner will review completion of deficiency list following notification by Contractor that the work is completed and made good under the terms of the Contract. Incomplete deficiencies items or work that remain will be charged back to the Contractor, deducted by the Owner from the Contractor's progress payments and paid from those funds for remedial work to be carried out, as required by Owner.

END OF SECTION

This page left blank intentionally

GENERAL

1.1 SECTION INCLUDES

- Connecting to existing services.
- Special scheduling requirements.

1.2 ACCESS AND EGRESS

- Design, construct and maintain temporary "access to" and "egress from" work areas, including stairs, runways, ramps, ladders, or scaffolding, independent of finished surfaces and in accordance with relevant municipal, provincial and other regulations.

1.3 USE OF SITE AND FACILITIES

- Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with the Owner and/or Owner to facilitate work as stated.
- Maintain existing services to building and provide for personnel and vehicle access.
- Where security is reduced by work provide temporary means to maintain security.
- Protect walls of passenger elevators, to approval of the Owner prior to use.
- Accept liability for damage, safety of equipment and overloading of existing equipment.
- Closures: protect work temporarily until permanent enclosures are completed.

1.4 EXISTING SERVICES

- Notify the Owner and utility companies of intended interruption of services and obtain required permission.
- Where Work involves breaking into or connecting to existing services, give the Owner 48 hours of notice for necessary interruption of mechanical or electrical service throughout course of work.
- Keep duration of interruptions to a minimum.
- Co-operate with the Owner in not unduly limiting access to the building and parking facilities during construction.
- Maintain access to the parking garage areas, surface parking areas, and access for garbage pick-up, maintenance vehicles and fire trucks at all times.
- Maintain fire and life safety systems and public access to exits during all stages of the Work.
- Always provide suitable access to the building for pedestrian traffic. Provide, install and maintain barricades, lights and catwalks as necessary. Barricades must be suitable for their intended use.

1.5 SPECIAL REQUIREMENTS

- Perform noise generating work as required by the local municipality:
  1. from Monday to Friday from 8:00 a.m. to 5:00 p.m.
  2. on Saturdays, Sundays, and statutory holidays to Owner approval.
- Submit schedule of special requirements or disruptions to owner.
- Ensure Contractor's personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.
- Keep within limits of work and avenues of ingress and egress.

PRODUCTS – NOT USED

EXECUTION – NOT USED

END OF SECTION

This page left blank intentionally

GENERAL

1.6 DEFINITIONS

- Base Bid: Includes all work shown on Drawings and as specified, except for the work specifically included in Additive or Deductive Alternates listed herein.
- Alternate Bid: Amount proposed by bidders and stated on the Bid Form that will be either Added to or Deducted From the Base Bid amount if the Owner decides to accept a change in either scope of work or in products, materials, equipment, systems, or other installation methods as described in the Contract Documents.
    1. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate the alternate into the Work. No other adjustments are made to the Contract Sum

1.7 ACCEPTANCE OF ALTERNATES

- The Owner may reject any proposed substitution without giving any reason.
- Owner reserves the right to select any or all of the Alternates up to 90 days after award of Contract. If Owner so selects, the time for Substantial Completion will be correspondingly adjusted for those selected items only. Immediately following Award of Contract, the Contractor shall prepare and distribute to each party involved notification of the status of each Alternate.
- Coordinate related work and modify surrounding work to integrate the Work of each alternate.

1.8 PROCEDURES

- Alternates shall conform to the requirements of each Section of the Specifications which pertain to the scope of work contained within the Alternate.
- Full details of the proposed substitution, including samples, shall be submitted in writing by the Contractor, to the Owner. The Owner shall give written acceptance of the use of the substitute material.
- Refer to Drawings for details and other information related to the construction of Alternates where such construction is required by scope.
- Include as part of each Alternate miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation, whether or not specifically mentioned as part of the Alternate.
- After signing of the Contract, material substitution will not be permitted unless the following conditions occur:

    1. The specified material is unavailable.

    2. The delivery of the specified material in the opinion of the Owner would unduly delay the completion of the Contract.

PRODUCTS – NOT USED

EXECUTION – NOT USED

END OF SECTION

This page left blank intentionally

GENERAL

1.9 REFERENCES

1.10 APPLICATIONS FOR PROGRESS PAYMENT

- Submit draft copy for review and approval.
- Submit to Owner, at least 14 days before first application for payment. Schedule of values for parts of Work, aggregating total amount of Contract Price, to facilitate evaluation of applications for payment.

1.11 PROGRESS PAYMENT

- Provide to owner no later than 10 days after receipt of an application for payment, certificate for payment in amount applied for or in such other amount as to be due. If owner amends application, owner will give notification in writing giving reasons for amendment.

1.12 SUBSTANTIAL PERFORMANCE OF WORK

- Prepare and submit to owner comprehensive list of items to be completed or corrected and apply for a review by owner to establish Substantial Performance of Work. Failure to include items on list does not alter responsibility to complete Contract.
- Immediately following issuance of certificate of Substantial Performance of Work, in consultation with owner, establish reasonable date for finishing Work.

1.13 PAYMENT OF HOLDBACK UPON SUBSTANTIAL PERFORMANCE OF WORK

- After issuance of certificate of Substantial Performance of Work:

    1. Submit application for payment of holdback amount.

- After receipt of application for payment, owner will issue certificate for payment of holdback amount.
- Amount authorized by certificate for payment of holdback amount is due and payable on day following expiration of holdback period stipulated in lien legislation applicable to Place of Work. Where lien legislation does not exist or apply, holdback amount is due and payable in accordance with other legislation, industry practice, or provisions which may be agreed to between parties. Owner may retain out of holdback amount sums required by law to satisfy liens against Work or, if permitted by lien legislation applicable to Place of Work, other third-party monetary claims against Contractor which are enforceable against Owner.

1.14 OFFICIAL SUBMISSION

- First through Final Progress Draws:

    1. Submit official ORIGINAL COPIES with the following mandatory documents, emailed copies will not be accepted:
        1. Original Invoice and Spreadsheet(s) detailing all work carried out to date, quantities, etc.
        2. All back invoices for cash allowances including permit, mechanical, electrical, design, shoring/scaffold/stage review, no exceptions
        3. WSIB Clearance Certificate, Province Specific/Equivalent

- Release of Holdback

    2. Submit official ORIGINAL COPIES with the following mandatory documents:

        1. Original Invoice and Spreadsheet(s) detailing all work carried out to date
        2. All back invoices for cash allowances including permit, no exceptions
        3. WSIB Clearance Certificate, Province Specific/Equivalent
        4. Letter of Warranty signed and Sealed, ORIGINAL

- All original documentation mentioned above is required prior to any issuance of any payment certification.

1.15 ALLOWANCES

- Any allowances that are drawn upon during progress or final payments shall be included as follows:

1. The invoices as supplied to the Contractor shall be attached to the Contractors Application for Payment. If the invoice is not attached, any claim on the Contractors Application for Payment shall be deducted from the Owners Certificate of Payment.
2. Allowance breakdowns shall be included as part of the schedule of values.
3. No mark-up shall be allowed on any allowance.

1.16 ADDITIONAL WORK

- If additional repairs are conducted by the Subcontractor that are not included in Scope of Work, the mark-up on materials and labour shall be cost plus five (5) percent.

END OF SECTION

GENERAL

1.1 DESCRIPTION

- Co-ordination of the work of all Sections of the Specifications is the responsibility of the Contractor.
- The Contractor will deemed to possess the necessary technical skills to carefully evaluate all requirements of the Contract, and to have included in the Contract Price all costs for the proper implementation of these requirements. No extras will be paid as a result of the Contractor's failure to designate work to individual sub-trade contracts or arising out of conflicts in sub-trade responsibility in the tender documents. Contractor to clarify scope of work for all trades.

1.2 JOB CONDITIONS

- Ensure that conditions within the building are maintained and that work proceeds under conditions meeting specified environmental requirements.
- Ensure that protection of adjacent property and the work is adequately provided and maintained to meet specified requirements.

1.3 WARRANTIES

- Ensure that warranties are provided as specified.
- Co-ordinate warranty conditions of interconnected work to ensure that full coverage is obtained.

1.4 CO-ORDINATION

- Review Contract Documents and advise the owner of possible conflicts between parts of the work before preparation of shop drawings, ordering of products or commencement of affected work.
- Co-ordinate scheduling, submittals, and work of the various Sections of specifications to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed at a later date and under separate contracts.
- Obtain necessary drawings, manufacturer's product data and other necessary data to provide a complete and proper installation.

    1. Check field dimensions prior to installing equipment and furnishings. Verify necessary clearances and means of access from equipment storage to final position.
    2. Make shop drawings and manufacturer's rough-in requirements available to trades involved.

- Co-ordinate and be responsible for layout of all work in each area and work on which subsequent work depends to facilitate mutual progress, and to prevent conflict between parts of the work.
- No addition to the Contract Price will allowed because of interference between the parts of the work of a trade or between the work of different trades unless such interference was brought to the attention of the consulting team in writing prior to the start of construction.

1.5 SUB-DIVISION OF WORK

- The work described in the following sections of this Specification has generally been divided into trade sections for the purpose of ready reference, but a section may apply to the work of more than one (1) Trade, Subcontractor or Supplier.
- The division of the work among Subcontractors and Suppliers is solely the responsibility of the Contractor, and the Owner assumes no responsibility to act as an arbitrator to establish subcontract limits between any sections or divisions of the work.

1.6 CO-OPERATION

- Ensure that all Subcontractors co-operate and coordinate with each other to ensure that work will be carried out expeditiously and will be satisfactory in all respects at completion.
- Ensure that all Subcontractors examine the Drawings and Specification covering the work of all other Subcontractors which may affect the performance of their own work.
- Take field dimensions relative to the 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 co-operation, information, or items to be fixed to, or built in, in adequate time.
- Subcontractors shall be responsible for damage of any kind to the work of other Subcontractors arising from their work, and they shall at their own expense, replace any materials or work so damaged that cannot be repaired or restored to the Owner satisfaction. Such repairs or replacements shall be made by the trade that did the original work.
- Ensure that all Subcontractors co-operate with other Subcontractors whose work attaches to, or is affected by their own work, and ensure that minor adjustments are made to make adjustable work fit to fixed work.
- Ensure that Subcontractors requiring anchorages or openings to be left for the installation of their work furnish the necessary information to the parties concerned in ample time so that proper provision can be made to install such anchorages or openings.
- All items to be built-in shall be supplied as and when required by the Subcontractors building in the items together with templates, measurements, or Shop Drawings.

1.7 EXAMINATION OF SURFACES AND CONDITIONS

- Each Subcontractor shall examine the work to which his work is to be applied, anchored or connected and shall review the job conditions.
- The Subcontractor shall report to the Contractor all unsatisfactory conditions likely to prevent the proper installation of his work.
- The unsatisfactory conditions shall be corrected immediately by the Contractor before commencing the particular work.
- Commencement of the work implies the Contractor's acceptance of the surfaces and conditions.

1.8 ACCESS

- Access to the parking garage areas, access to surface parking areas, and access for garbage pick-up, maintenance vehicles and fire trucks must be always maintained.
- Co-operate with the Owner in not unduly limiting access to the building and parking facilities during construction.
- Always provide suitable access to the building for pedestrian traffic. Provide, install and maintain barricades, lights and catwalks as necessary. Barricades must be suitable for their intended use.

1.9 PROTECTION OF THE PUBLIC

Erect hoarding, and provide, install and maintain barricades, notice and warning boards, and maintain protection of all kinds for the protection of the workers engaged in the work, for the protection of adjoining property and for protection of the public in accordance with local regulations.

1.10 PROTECTION OF WORK AND MAKING GOOD

- Adequately protect the work at all stages of the operations and maintain the protection until work is completed. Remove and replace at no expense to the Owner, any work and materials damaged that cannot be repaired or restored to the owner’s satisfaction.
- Notwithstanding the requirements detailed in this Specification, all Subcontractors shall protect the work of other Subcontractors from damage due to performing their work.
- Damaged work shall be made good by those performing the work originally but at the expense of those causing the damage.
- Care shall be taken during the execution of all work to minimize dust and disruption and damage to existing finishes. All damage shall be made good to the satisfaction of the Owner at the expense of those causing the damage.

1.11 NOISY AND DUST RAISING OPERATIONS

- All noisy and dust raising operations may only be carried out between the days and times approved by the Owner.
- Protect building areas from the intrusion of dust, smoke or any other debris resulting from the work of the Contract.

1.12 RE-CONSTRUCTION, ALTERATIONS AND MAKING GOOD

- Where new work connects with existing work and where existing work is altered, carry out all necessary cutting and fitting required to make satisfactory connections with the existing work under this Contract so as to leave the entire work in a finished and workmanlike condition.
- Unless otherwise specified or required by codes or by-laws to meet a certain requirement or both, make good new work to match existing work.
- Make good concrete, masonry, paving, landscaping and other materials and finishes which are damaged or disturbed during the progress of repairs and re-construction under the Contract.
- Existing services shall be disconnected and relocated, where necessary, and re-connected as required to complete the work. This work shall include, without being limited to, plumbing, drainage, heating, ventilating, air conditioning and electrical services.
- Where existing work is to be made good, the new work shall match exactly the old work in material, construction, and finish, unless otherwise noted or specified.
- Drilling or cutting of existing work shall be carefully done, leaving a clean hole no larger than required.
- Wherever it becomes necessary to cut or interfere in any manner with existing equipment or service lines for short periods of time, do such work at times agreed upon between the Owner.
- If required, in critical locations, interference or installation drawings or both shall be prepared showing the work of the various trades as well as the existing installations and shall be submitted to the Owner for review before the commencement of the work.
- Unless instructed otherwise by the Owner, power-wash all of the affected surfaces within the designated work area, including but not limited to, walls columns, slab surfaces, pipes, louvers, etc., regardless of their condition prior to the start of the repair work.

1.13 PROJECT AND CONSTRCUCTION MEETINGS

- Prior to commencement of any work, a preconstruction meeting will be held by the Owner and Contractor to review the condition of existing finishes and discuss the Work of the Contract.
- Biweekly regular construction meetings shall be convened, at the site, for the duration of the contract or otherwise as directed by the owner. The meetings shall be under the direction of the owner.

END OF SECTION

This page left blank intentionally

GENERAL

1.14 ADMINISTRATIVE

- Submit to owner submittals listed for review. Submit with reasonable promptness and in orderly sequence so as to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.
- Do not proceed with Work affected by submittal until review is complete.
- Present shop drawings, product data, samples, and mock-ups in SI Metric units.
- Where items or information is not produced in SI Metric units converted values are acceptable.
- Review submittals prior to submission to Owner. This review represents that necessary requirement has 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 shall be considered rejected.
- Notify Owner, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- Verify field measurements and affected adjacent Work are coordinated.
- Contractor's responsibility for errors and omissions in submission is not relieved by Owner's review of submittals.
- Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Owner’s review.
- Keep one reviewed copy of each submission on site.

1.15 CERTIFICATION OF MATERIALS

- Before work commences, obtain from the manufacturer(s), written certification of both the suitability of the materials selected to the applications required, and that all materials used are compatible with each other and with the existing materials.
- If the material designated for a given application is not certifiable, provide alternate, certifiable materials for this application and submit this change to the Owner for review.

1.16 SHOP DRAWINGS AND PRODUCT DATA

- The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- Submit drawings stamped and signed by professional engineer registered or licensed in the province of work.
- The cost of all Shop Drawings shall be paid for under the respective section.
- 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.
- Allow 10 days for Owner’s review of each submission.
- Adjustments made on shop drawings by Owner are not intended to change Contract Price. If adjustments affect value of Work, state such in writing owner prior to proceeding with Work.
- Make changes in shop drawings as Owner may require, consistent with Contract Documents. When resubmitting, notify owner in writing of any revisions other than those requested.
- 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.

- Submissions shall include:

    6. Date and revision dates.
    7. Project title and number.
    8. Name and address of:

1. Subcontractor.
2. Supplier.
3. Manufacturer.

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

10. 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. Operating weight.
8. Wiring diagrams.
9. Single line and schematic diagrams.
10. Relationship to adjacent work.

- After owner's review, distribute copies.
- Submit 3 copies of shop drawings for each requirement requested in specification Sections
- Submit 3 copies of product data sheets or brochures for requirements requested in specification Sections and as requested by owner where shop drawings will not be prepared due to standardized manufacture of product.
- Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- Delete information not applicable to project.
- Supplement standard information to provide details applicable to project.
- If upon review by Owner, no errors or omissions are discovered or if only minor corrections are made, 2 copies will be returned, and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

1.17 SAMPLES

- Submit for review samples as requested in respective specification Sections. Label samples with origin and intended use.
- Identify each type of material, Manufacturer and Subcontractor.
- Notify owner in writing, at time of submission of deviations in samples from requirements of Contract Documents.
- Where colour, pattern or texture is criterion, submit full range of samples.
- Adjustments made on samples by Owner are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Owner prior to proceeding with Work.
- Make changes in samples which Owner may require, consistent with Contract Documents.
- Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.
- Materials shall not be ordered until the samples are approved.

1.18 CERTIFICATES AND TRANSCRIPTS

- Immediately after award of Contract, submit Workers' Compensation Board status.
- Submit transcription of insurance immediately after award of Contract.
- Submit Notice of Project from the Ministry of Labour immediately after award of Contract.

1.19 REQUIRED SUBMITTALS

Section No.	Section Title	Description	Required by
N/A	N/A	Material safety data sheets for all materials to be used on site	Prior to mobilization

Section No.	Section Title	Description	Required by
N/A	N/A	Written confirmation that you have a Joint Health & Safety Committee and that all employees are aware of, and are trained in, all aspects of safety as required under the Occupational Health and Safety Act and Regulations.	Prior to mobilization
N/A	N/A	Workplace Safety and Insurance Board and Clearance Certificate	Prior to mobilization
N/A	N/A	Notice of Project	Prior to mobilization
N/A	N/A	Names of Trained Site Safety Personnel	Prior to mobilization
N/A	N/A	Proof of WHMIS Training for Site Personnel	Prior to mobilization
N/A	N/A	Names of Project Superintendent and Site Foreman	Prior to mobilization
N/A	N/A	Emergency Telephone Number	Prior to mobilization
N/A	N/A	List of Proposed Hazardous Materials	Prior to mobilization
N/A	N/A	General Liability Certificate of Insurance	Prior to mobilization
N/A	N/A	Building Permit	Prior to mobilization
N/A	N/A	Professional Liability Insurance	Prior to mobilization
N/A	N/A	Time schedule of when work is to commence, anticipated completion date, and an indication of when the various parts of work are to be carried out.	Prior to mobilization

END OF SECTION

This page left blank intentionally

GENERAL

1.20 RELATED REQUIREMENTS

- Section 01 33 00 – Submittal Procedures
- This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.21 REFERENCES

- Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations
- Province of Ontario

    1. Occupational Health and Safety Act and Regulations for Construction Projects, R.S.O.

1.22 ACTION AND INFORMATIONAL SUBMITTALS

- Submit in accordance with Section 01 33 00, Submittal Procedures.
- Submit site-specific Health and Safety Plan: Within seven (7) days after date of Notice to Proceed and prior to commencement of Work.

1.23 SAFETY ASSESSMENT

- Perform site specific safety hazard assessment related to project.

1.24 GENERAL REQUIREMENTS

- Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.

1.25 RESPONSIBILITY

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

1.26 COMPLIANCE REQUIREMENTS

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

1.27 UNFORSEEN HAZARDS

- When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province having jurisdiction and advise Owner verbally and in writing.

1.28 CORRECTION OF NON-COMPLIANCE

- Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Owner.

1.29 WORK STOPPAGE

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

1.30 FIRE PROTECTION

- Provide and maintain temporary fire protection equipment during performance of Work required by insurance companies having jurisdiction and governing codes, regulations and by-laws.

- Burning rubbish and construction waste materials is not permitted on site.
- Maintain placed or installed fire resistive construction, fireproofing and fire-stopping, to protect the portions of the Work during construction.

END OF SECTION

GENERAL

1.1 REFERENCES AND CODES

- Perform Work in accordance with Ontario Building Code (OBC) including amendments up to tender closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.
- Meet or exceed requirements of:

    1. Contract documents.
    2. Specified standards, codes and referenced documents.

- All Contract Forms, Codes, Specifications, Standards, Manuals and Installation, Application and Maintenance Instructions, referred to in this Specification unless otherwise specified shall be the latest published editions at the date of the Contract.
- All codes, standard specifications and by-laws referred to in this section shall be current editions including all revisions, addenda and supplements.

1.2 HAZARDOUS MATERIAL DISCOVERY

- Asbestos: demolition of spray or trowel-applied asbestos is hazardous to health. Stop work immediately when material resembling spray or trowel-applied asbestos is encountered during demolition work. Notify Owner.
- PCB: Polychlorinated Biphenyl: stop work immediately when material resembling Polychlorinated Biphenyl is encountered during demolition work. Notify Owner.
- Mould: stop work immediately when material resembling mould is encountered during demolition work. Notify Owner.

1.3 LAWS, NOTICES, PERMITS AND FEES

- The laws of the Place of the Work shall govern the Work.
- The Contractor shall obtain, and the Owner shall pay for the building permit, permanent easements and rights of servitude. The Contractor shall be responsible for permits, licenses, or certificates necessary for the performance of the Work which were in force at the date of executing the Agreement.
- Give the required notices and comply with the laws, ordinances, rules, regulations, or codes which are or become in force during the performance of the Work and which relate to the Work, to the preservation of the public health and to construction safety.
- If the Contractor knowingly performs or allows work to be performed that is contrary to any laws, ordinances, rules, regulations or codes, the Contractor shall be responsible for and shall correct the violations thereof; and shall bear the costs, expenses and damages attributable to the failure to comply with the provisions of such laws, ordinances, rules, regulations or codes.
- Determine detailed requirements of authorities having jurisdiction.

END OF SECTION

This page left blank intentionally

GENERAL

1.4 RELATED REQUIREMENTS

- This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.5 INSPECTIONS

- All work shall be inspected and accepted on behalf of the Owner by the Owner. The Contractor is required to co-operate with and provide samples to the Owner. The Contractor shall give the Owner 24 hours advance notice for inspection services. Contractor shall contact the Owner either by phone or in person.
- All work that is deemed not acceptable to the Owner and/or not conforming to the requirements of the project specification and/or manufacturer's specifications shall be remediated immediately, to the satisfaction of the Owner at no additional cost to the Owner.
- The conditions governing the inspection of the work shall be as stated in the contract document.
- All concrete materials will and shall be tested during the application to determine their compliance with the specifications and the mix design submitted.
- All repairs and construction work will be subject to inspection.
- Notify the Owner, at least, one (1) day in advance of the times when the work is ready and available for Inspection.
- The Contractor shall notify the Owner 48 hours in advance of any intended placement of concrete, asphalt or trench backfill materials.
- Allow in the Contract Amount for the costs associated with inspections of the work, excluding the cost of the Owner's time which will be paid for by the Owner.
- The cost of re-inspection due to deficient work, including the Owner's fees, inclusive of all associated disbursements, for any such re-inspection work, or cancelled inspections without notice, will be the Contractor's responsibility.
- Also allow for, in the Contract Amount, all costs associated with inspection of the work required by the Manufacturer(s) of the specified materials.
- Other random inspections of the work may be carried out at such times as considered necessary by the Owner to verify compliance of the work with the requirements of this Specification.
- Revisions to the agreed inspection procedures shall only be made by written authorization of the Owner.
- The Contractor shall maintain a safety harness, including lanyard and rope grab, on site at all times for use by the Owner.
- All testing shall be paid from the material testing allowance in the Form of Tender, excluding the cost of the Owner's time which will be paid for by the Owner.
- The Contractor is responsible to arrange for testing with an approved testing agency. The Contractor shall assist in facilitating the testing.
- The Contractor shall include in his Contract Price the cost of making good any voids resulting from cores drilled through and removed from concrete components and/or replacing any overburden materials which become disturbed as a result of investigative work carried out by the Owner.

1.6 INDEPENDENT INSPECTION AGENCIES

- Independent Inspection/Testing Agencies will be engaged Owner for purpose of inspecting and/or testing portions of Work.
- Provide equipment required for executing inspection and testing by appointed agencies.
- Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- 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 Owner at no cost to Owner. Pay costs for retesting and re-inspection.

1.7 ACCESS TO WORK

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

1.8 PROCEDURES

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

1.9 REJECTED WORK

- 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 Owner as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
- Make good other Contractor's work damaged by such removals or replacements promptly.
- If in opinion of Owner it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner 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 Owner.

1.10 REPORTS

- Submit copies of inspection and test reports to Owner.

1.11 TESTS AND MIX DESIGNS

- Furnish test results and mix designs as requested.
- Cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work will be appraised by Owner and may be authorized as recoverable.
- All work shall be tested in compliance with the requirements detailed in this specification and all applicable CSA standards and building codes.

Notification

1. Notify the Owner a minimum of 24 hours prior to the time testing is required.

Concrete

2. Test each pour of concrete during placement for workability (slump) and air entrainment and cast samples for curing and compressive strength testing at the laboratory.
3. When surface repair of the concrete is carried out, test each pour of concrete for bond strength. Test to be carried out a minimum of 7 days after placement of the concrete.

Membrane and Wearing Course

4. Measure each day’s application of membrane or wearing course material for thickness, and test for adhesion.

Changes to Testing Requirements

5. At the sole discretion of the Owner the testing requirements detailed above may be modified and a reduced schedule of testing implemented for small quantities of work. All changes to the testing requirements are to be confirmed by the Contractor in writing.

1.12 MOCK-UPS

- Prepare mock-ups for Work specifically requested in specifications. Include for Work of all Sections required to provide mock-ups.
- Construct in all locations acceptable to Owner.
- Prepare mock-ups for Owner’s and Owner's review with reasonable promptness and in an orderly sequence, so as not to cause any delay in Work.
- Failure to prepare mock-ups in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.
- Mock-ups may remain as part of Work.

1.13 CONTRACTOR'S OBLIGATIONS

- From time to time, examine the work of all Subcontractors at the building, and report to the Owner any defects or deficiencies which may adversely affect the work.
- Contractor is to ensure that work carried out is in compliance with the Contract Documents and to accept responsibility for delays or costs relating from failure to inspect a Subcontractor's work.
- The Contractor is to provide a full time Superintendent. The Superintendent is to be on site on a continuous basis during the execution of the Work.

END OF SECTION

This page left blank intentionally

GENERAL

1.14 RELATED REQUIREMENTS

This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.15 ACTION AND INFORMATIONAL SUBMITTALS

Provide submittals in accordance with Section 01 33 00, Submittal Procedures.

1.16 INSTALLATION AND REMOVAL

Provide temporary utilities controls in order to execute work expeditiously.
Remove from site all such work after use.

1.17 DEWATERING

Provide temporary drainage and pumping facilities to keep excavations and site free from standing water.

1.18 WATER SUPPLY

Water for construction purposes will be provided from the Owner's existing facilities and paid for by the Owner.
Hoses and containers for water shall be provided by the Contractor or Subcontractors requiring them.

1.19 TEMPORARY HEATING AND VENTILATION

Provide temporary heating required during construction period, including attendance, maintenance and fuel.
Construction heaters used inside building must be vented to outside or be non-flameless type. Solid fuel salamanders are not permitted.
All heaters must be adequately vented as necessary to ensure that carbonation of the surface of plastic concrete does not occur.
Provide temporary heat and ventilation in enclosed areas as required to:

1. Facilitate progress of Work.
2. Protect Work and products against dampness and cold.
3. Prevent moisture condensation on surfaces.
4. Provide ambient temperatures and humidity levels for storage, installation and curing of materials.
5. Provide adequate ventilation to meet health regulations for safe working environment.

Maintain temperatures of minimum 10 degrees C in areas where construction is in progress.
Ventilating:

6. Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.
7. Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.
8. Dispose of exhaust materials in manner that will not result in harmful exposure to persons.
9. Ventilate storage spaces containing hazardous or volatile materials.
10. Ventilate temporary sanitary facilities.
11. Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful contaminants.

Maintain strict supervision of operation of temporary heating and ventilating equipment to:

12. Conform to applicable codes and standards.
13. Enforce safe practices.
14. Prevent abuse of services.
15. Prevent damage to finishes.
16. Vent direct-fired combustion units to outside.

Be responsible for damage to Work due to failure in providing adequate heat and protection during construction.

1.20 TEMPORARY POWER AND LIGHT

The existing electrical service may be used as a temporary service for lighting and the operation of electric pumps, motors, vibrators and other power tools during the construction period to the extent that there is sufficient capacity. Where capacity is insufficient provide temporary services to be removed upon completion of the work at no cost to the Owner.
The cost of the power supply for the existing service only, shall be paid for by the Owner.
Extension cords shall be supplied by the Trades concerned.

1.21 FIRE PROTECTION

Provide all temporary fire protection equipment as required and maintain in good order throughout the construction period.

1.22 RESTRICTED BUILDING ACCESS

Workers are not permitted access to the building without the prior authorization of the Owner.

1.23 STORAGE ON THE SITE

Limited storage space is available on the site.
Materials shall be stored in such a manner that no damage shall be done to the material, the structures or the site and surrounding property. Obtain Owner's approval of the location and extent of all on site storage areas.
Co-ordinate deliveries and storage areas with the Owner. Do not obstruct the Owner's maintenance and service operations or parking facilities.
No flammable or toxic materials shall be stored within the building or parking garage.

1.24 TEMPORARY TOILETS AND WASHBASINS

Provide and maintain, in compliance with Provincial statutes and local by-laws, sanitary temporary toilets and washbasins for the use of the workers on the project.

END OF SECTION

GENERAL

1.25 RELATED REQUIREMENTS

This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.26 REFERENCES

Canadian General Standards Board (CGSB)

1. CAN/CGSB 1.189, Exterior Alkyd Primer for Wood.
2. CGSB 1.59, Alkyd Exterior Gloss Enamel.

Canadian Standards Association (CSA International)

3. CSA A23.1/A23.2, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
4. CSA 0121-M, Douglas Fir Plywood.
5. CAN/CSA S269.2-M, Access Scaffolding for Construction Purposes.
6. CAN/CSA Z321, Signs and Symbols for the Occupational Environment.

Public Works Government Services Canada (PWGSC) Standard Acquisition Clauses and Conditions (SACC)-ID: R0202D, Title: General Conditions 'C'.

1.27 ACTION AND INFORMATIONAL SUBMITTALS

Provide submittals in accordance with Section 01 33 00, Submittal Procedures.

1.28 INSTALLATION AND REMOVAL

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

1.29 SHORING AND SCAFFOLDING

Scaffolding in accordance with CAN/CSA S269.2.
Provide shoring and scaffolding rigging drawings designed and stamped by a suitably experienced Professional Engineer registered in the province of work, where required.
Construct and maintain shoring, scaffolding and swing stages in a secure and safe manner in accordance with local by-laws and Occupational Health and Safety Act and Regulation. Erect shoring and scaffolding independent of walls.
Use shoring and scaffolding in such a manner as to interfere as little as possible with other trades, traffic, or with normal usage of the building.
All areas of slab subject to construction traffic or storage of materials must be adequately shored.
Shoring to be adjustable heavy duty steel jacks nailed to timber sole and head plates.
Remove shoring and scaffolding only after receipt of confirmation from the Owner that the concrete placed to repair delaminated surfaces has attained a minimum of 75 percent of the specified 28 day strength and only after the use of heavy vehicles or equipment on the roof slab has finished.
Removal of any shores prior to receipt of written authorization from the Owner is at the risk of the Contractor.

1.30 HOISTING

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

1.31 SITE STORAGE/LOADING

Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.
Do not load or permit to load any part of Work with weight or force that will endanger Work.

1.32 EQUIPMENT, TOOL AND MATERIALS STORAGE

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

1.33 SANITARY FACILITIES

Provide sanitary facilities for work force in accordance with governing regulations and ordinances.
Post notices and take precautions as required by local health authorities. Keep area and premises in sanitary condition.

1.34 PROTECTION AND MAINTENANCE OF TRAFFIC

Provide access and temporary relocated roads as necessary to maintain traffic.
Maintain and protect traffic on affected roads during construction period except as otherwise specifically directed by Owner.
Provide measures for protection and diversion of traffic, including provision of watch-persons and flag-persons, erection of barricades, placing of lights around and in front of equipment and work, and erection and maintenance of adequate warning, danger, and direction signs
Protect travelling public from damage to person and property.
Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.
Verify adequacy of existing roads and allowable load limit on these roads. Contractor: responsible for repair of damage to roads caused by construction operations.
Construct access and haul roads necessary.
Haul roads: constructed with suitable grades and widths; sharp curves, blind corners, and dangerous cross traffic shall be avoided.
Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.
Dust control: adequate to ensure safe operation at all times.
Location, grade, width, and alignment of construction and hauling roads: subject to approval by Owner.
Lighting: to assure full and clear visibility for full width of haul road and work areas during night work operations.
Provide snow removal during period of Work.
Remove, upon completion of work, haul roads.

1.35 PLANT AND MACHINERY

Provide all form work, scaffolding, equipment, tools and machinery for the proper execution of the work.
Where it is normal practice for the trade to provide its own shoring or scaffolding, it shall be included in the Subcontract.
Scaffolding and other equipment shall be erected in accordance with local by-laws, the Occupational Health and Safety Act and Regulations, without damage to the structure or the finishes, shall be moved to suit the installation of the work of other trades and promptly removed at completion.
Refer to article 1.2 of this section, "Shoring and Scaffolding".
Take all necessary precautions to adequately protect the building and landscape materials, including shrubs and trees, from damage. Pruning of trees to facilitate access to the building shall be done in consultation with the Owner and as approved by the Owner.
Make good to the satisfaction of the Owner, and at no cost to the Owner, the damage resulting from the work of the Contract and related activities.

1.36 CLEAN-UP

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

END OF SECTION

This page left blank intentionally

GENERAL

1.37 RELATED REQUIREMENTS

This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.38 REFERENCES

Canadian General Standards Board (CGSB)

1. CGSB 1.59, Alkyd Exterior Gloss Enamel.
2. CAN/CGSB 1.189, Exterior Alkyd Primer for Wood.

Canadian Standards Association (CSA International)

3. CSA-O121-M, Douglas Fir Plywood.
4. CSA S350-M, Code of Practice for Safety in Demolition of Structures.

Occupational Health and Safety Act and regulations for Construction Projects, Latest Edition.
National Building Code of Canada, Part 8, “Safety Measures at Construction and Demolition Sites”, and Provincial requirements.
Public Works Government Services Canada (PWGSC) Standard Acquisition Clauses and Conditions (SACC)-ID: R0202D, Title: General Conditions 'C'.

1.39 INSTALLATION AND REMOVAL

Provide temporary controls in order to execute Work expeditiously.
Remove from site all such work after use.

1.40 GUARD RAILS AND BARRICADES

Provide secure, rigid guard rails and barricades around deep excavations, open shafts, open stair wells, open edges of floors and roofs.
Provide as required by governing authorities and as indicated.

1.41 WORK AREA HOARDING

Where required, provide a minimum of one lockable truck entrance gate and at least one pedestrian door as directed and conforming to applicable traffic restrictions on adjacent streets. Equip gates with locks and keys.
Erect and maintain pedestrian walkways including roof and side covers, complete with signs and electrical lighting as required by law.
Paint public side of site enclosure in selected colours with one coat primer to CAN/CGSB 1.189M and one coat exterior paint to CAN/CGSB 1.59. Maintain public side of enclosure in clean condition.
Provide barriers around trees and plants designated to remain. Protect from damage by equipment and construction procedures.

1.42 COVERED HOARDING

Covered hoardings will be required when working over exits that serve as fire exits and locations where entrance or exit is required to remain open during work as stipulated by owner.
Erect hoarding, and provide, install and maintain barricades, notice and warning boards, and maintain protection of all kinds for the protection of the workers engaged in the work, for the protection of adjoining property and for protection of the public in accordance with local regulations.
Covered hoardings for Access roads and Safe Areas shall be designed by a Professional Engineer licensed in the province of work under the guidelines of the Occupational Health and Safety Act and with local authorities having jurisdiction.

1.43 FALL ARREST

If building does not have an approved roof anchor system in place, supply an engineered rigging system signed and sealed by a Professional Engineer.
Provide rigging drawings showing the location of anchors, lifelines and primary suspension lines indicating the following:

1. Primary suspension line size.
2. Life safety line size.
3. Quantity and location of counterweights.
4. Size and length of outrigger beam.
5. Configuration of stages, whether bosuns chair, swing stage or tiered swing stage.
6. Details indicating:

1. proprietary beam saddles with anchorage
2. compression fittings
3. shackles or forged hooks
4. protection of lifelines
5. size and quantity of cable clips

Where swing stage rigging is not used prepare plans indicating a location of lifeline tie offs.
Provide typical details indicating the construction and anchorage for secure, rigid guard rails and barricades around deep excavations, open shafts, open stair wells, open edges of floors and roofs.
Conform to the requirements of Occupational Health and Safety Act and regulations for Construction Projects

1.44 WEATHER ENCLOSURES

Weather shall be considered incidental to work and shall not be claimed as additional.
The applicable standard shall be used for materials or building components when enclosures and/or heating is required to complete the work.
Provide weather tight closures for, but not limited to:

1. unfinished door and window openings.
2. openings in floors and roofs.
3. openings through walls.
4. locations where daily work is not completed in a day's work and components left exposed are sensitive to weather conditions.
5. protection of materials used that are sensitive to weather conditions.

Design enclosures to withstand wind pressure, snow loading etc.

1.45 DUST TIGHT SCREENS

Provide dust tight screens to localize dust generating activities, and for protection of workers, finished areas of Work and public.
Maintain and relocate protection until such work is complete.
Provide means for ventilating area if work is to occur in an interior or confined space.
Ventilate work area when it corresponds with areas used by tenants or patrons concurrently for parking or egress. If dust generation will affect tenants or patrons provide sealed enclosure with adequate ventilation for health and safety of workers.

1.46 ACCESS TO SITE

Provide and maintain access roads, sidewalk crossings, ramps and construction runways as may be required for access to Work.
Provide all appropriate signage directing the public and building occupants away from work area
Emergency exits: Maintain clear and unobstructed use of all existing exit doors and routes. This may include the provision of overhead protection and enclosed exit walkways in the case of overhead work. Provide adequate lighting for 24-hour use.

1.47 PUBLIC TRAFFIC FLOW

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

1.48 FIRE ROUTES

Maintain access to property including overhead clearances for use by emergency response vehicles.
Provide all required signage to inform emergency vehicles of temporary route for access if modified as part of work.

1.49 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

Protect surrounding private and public property from damage during performance of Work.
Be responsible for damage incurred.

1.50 PROTECTION OF BUILDING FINISHES

Provide protection for finished and partially finished building finishes and equipment during performance of Work.
Provide necessary screens, covers, and hoardings.
Confirm with Owner locations and installation schedule 3 days prior to installation.
Be responsible for damage incurred due to lack of or improper protection.

PRODUCTS – NOT USED

EXECUTION – NOT USED

END OF SECTION

This page left blank intentionally

GENERAL

1.51 RELATED REQUIREMENTS

This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.52 REFERENCES

1.53 QUALITY

Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.
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.
Should disputes arise as to quality or fitness of products, decision rests strictly with Owner based upon requirements of Contract Documents.
Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.54 CERTIFICATION OF MATERIALS

Before work commences, obtain from the manufacturer(s), written certification of both the suitability of the materials selected to the applications required, and that all materials used are compatible with each other and with the existing materials.
If the material designated for a given application is not certifiable, provide alternate, certifiable materials for this application and submit this change to the Owner for review.

1.55 AVAILABILITY

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

1.56 STORAGE, HANDLING AND PROTECTION

Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
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.
Provide all material data sheets and comply with the requirements of the Workplace Hazardous Materials Information System (WHMIS) as subsequently revised.
Materials shall not be stockpiled on suspended (structural) slabs except where adequate shoring and support is provided to the slab area. Obtain Owner's approval prior to placing materials.
Store products subject to damage from weather in weatherproof enclosures.
Store cementitious products clear of earth or concrete floors, and away from walls.
Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.
Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
Store sheet materials, lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.
Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.
Remove and replace damaged products at own expense and to satisfaction of Owner.
Touch-up damaged factory finished surfaces to Owner's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.57 STORAGE ON THE SITE

Limited storage space is available on the site.

Materials shall be stored in such a manner that no damage shall be done to the material, the structures or the site and surrounding property. Obtain Owner's approval of the location and extent of all on site storage areas.
Co-ordinate deliveries and storage areas with the Owner. Do not obstruct the Owner's maintenance and service operations or parking facilities.
No flammable or toxic materials shall be stored within the building or parking garage.

1.58 QUALITY OF WORK

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

1.59 COORDINATION

Ensure cooperation of workers in laying out Work. Maintain efficient and continuous supervision.
Be responsible for coordination and placement of openings, sleeves and accessories.

1.60 REMEDIAL WORK

Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Coordinate adjacent affected Work as required.
Perform remedial work by specialists familiar with materials affected. Perform work in a manner that neither damage nor put at risk any portion of the Work.

1.61 FASTENINGS

Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.
Prevent electrolytic action between dissimilar metals and materials.
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.
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.
Keep exposed fastenings to a minimum, space evenly and install neatly.
Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

1.62 FASTENINGS - EQUIPMENT

Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.
Use heavy hexagon heads, semi-finished unless otherwise specified. Use No. 304 stainless steel for exterior areas.
Bolts may not project more than one diameter beyond nuts.
Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

1.63 PROTECTION OF WORK IN PROGRESS

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

1.64 EXISTING UTILITIES

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

END OF SECTION

This page left blank intentionally

GENERAL

1.65 RELATED REQUIREMENTS

This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.66 SUBMITTALS

Submit written request in advance of cutting or alteration which affects:

1. Structural integrity of any element of Project.
2. Integrity of weather exposed or moisture resistant element.
3. Efficiency, maintenance, or safety of any operational element.
4. Visual qualities of sight exposed elements.
5. Work of Owner or separate contractor.

PRODUCTS

1.67 MATERIALS

Primary Products: Those required for original installation.

EXECUTION

1.68 EXAMINATION

Examine existing conditions prior to commencing Work, including elements subject to damage or movement during cutting and patching.
After uncovering existing Work, assess conditions affecting performance of work.
Beginning of cutting or patching means acceptance of existing conditions.

1.69 PREPARATION

Provide temporary supports to ensure structural integrity of the Work. Provide devices and methods to protect other portions of Project from damage.
Provide protection from elements for areas which may be exposed by uncovering work.
Maintain excavations free of water.

1.70 CUTTING

Execute cutting and fitting, including excavation and fill, to complete the Work.
Uncover work to install improperly sequenced work.
Remove and replace defective or non-conforming work.
Remove samples of installed work for testing, when requested.
Provide openings in the Work for penetration of mechanical and electrical work.
Employ skilled and experienced installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.
Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

1.71 PATCHING

Execute patching to complement adjacent Work.
Fit Products together to integrate with other Work.
Execute work by methods to avoid damage to other Work, and which will provide appropriate surfaces to receive patching and finishing.
Restore work with new Products in accordance with requirements of Contract Documents.
At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material, to full thickness of the penetrated element.
Refinish surfaces to match adjacent finish. For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.

END OF SECTION

GENERAL

1.72 RELATED REQUIREMENTS

This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.73 REFERENCES

Public Works Government Services Canada (PWGSC) Standard Acquisition Clauses and Conditions (SACC)-ID: R0202D, Title: General Conditions "C".

1.74 PROJECT CLEANLINESS

Maintain Work in tidy condition, free from accumulation of waste products and debris.
Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
Provide on-site suitable containers for collection of waste materials and debris.
Clean interior areas prior to start of finishing work and maintain areas free of dust and other contaminants during finishing operations.
Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

1.75 BUILDING SURFACES

Always keep all building surfaces dry and free from oil or contaminants. Clean up all contaminated materials and remove all traces from the building surfaces where discolouration occurs or where application of other materials may be affected.

1.76 DEBRIS

Maintain the work area in a clean and tidy condition.
Contractor is to ensure that all debris is confined to the work area and is promptly removed from the site. Storage of debris will only be allowed if placed in a suitable container to be approved by the Owner and to be located in an area approved by the Owner. No stockpiling will be allowed on suspended (structural) slabs. Removal of debris shall be carried out daily in accordance with local safety regulations and in a manner approved by the Owner.
The work area shall be left tidy at the end of each workday with all debris either removed from the site or stored in an approved container.

1.77 FINAL CLEANING

When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
Remove waste products and debris other than that caused by others and leave Work clean and suitable for occupancy.
Prior to final review remove surplus products, tools, construction machinery and equipment.
Remove waste materials from site at regularly scheduled times. Do not burn waste materials on site.
Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures. Replace broken, scratched, or disfigured glass.
Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, and floors.
Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
Remove dirt and other disfiguration from exterior surfaces.

END OF SECTION

This page left blank intentionally

GENERAL

1.78 RELATED REQUIREMENTS

This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.79 REFERENCES

1.80 ADMINISTRATIVE REQUIREMENTS

Acceptance of Work Procedures:

1. Contractor's Inspection: Contractor conducts inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
    1. Notify Owner in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
    2. Request Owner's inspection.
2. Owner's Inspection:
    1. Owner and Contractor to inspect Work and identify defects and deficiencies.
    2. Contractor is to correct Work as directed.
3. Completion Tasks: submit written certificates in English that tasks have been performed as follows:
    1. Work: completed and inspected for compliance with Contract Documents.
    2. Defects: corrected and deficiencies completed.
    3. Equipment and systems: tested, adjusted, and balanced and fully operational.
    4. Operation of systems: demonstrated to Owner's personnel.
4. Declaration of Substantial Performance: when Owner considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.
5. Commencement of Lien and Warranty Periods: date of Owner's acceptance of submitted declaration of Substantial Performance to be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work.
6. Final Payment:
    1. When Owner considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.
    2. Refer to Short Form Contract: when Work deemed incomplete by Owner, complete outstanding items and request re-inspection.
7. Payment of Holdback: after issuance of Certificate of Substantial Performance of Work, submit application for payment of holdback amount in accordance with contractual agreement.

1.81 CONSIDERATION OF SUBSTANTIAL PERFORMANCE AND COMPLETION BY OWNER

A contract will be considered substantially performed given the following:

1. when the improvement to be made under that contract is capable of completion or, where there is a known defect, correction, at a cost of not more than, whichever is larger,
    1. 3 percent of the first $500,000 of the contract price,
    2. 2 percent of the next $500,000 of the contract price, and
    3. 1 percent of the balance of the Contract price.
2. Where the work cannot be completed expeditiously for reasons beyond the control of the Owner or Contractor, the remaining costs will be deleted from the contract price in determination of substantial performance.

A contract will be considered completed given the following:

3. when the improvement to be made under that contract is capable of completion or, where there is a known defect, correction, at a cost of the lesser of,
    1. 1 percent of the contract price.
    2. $1000.00

PRODUCTS (NOT USED)

EXECUTION

1.82 INSPECTION AND DECLARATION

Contractor and all Subcontractors shall conduct an inspection of Work in conjunction with the Owner; identify deficiencies and defects in preparation of list for application of Substantial Performance.

Owner will schedule date within the time allowance of the Contract documents for both Owner and Contractor to perform inspection of Work and to confirm Work identified on submitted list.
Owner will within the time allowance of the Contract documents provide a breakdown of costs associated with the deficiencies and defects for Consideration of Substantial Performance.
If Work is deemed incomplete in Consideration of Substantial Performance, complete outstanding items and request re-inspection following the same protocol.
When the Contractor is satisfied that the Work is completed make application for final inspection of Owner. Owner will within the allowances of the Contract documents perform final inspection of the Work.
Any deficiencies and defects shall be tabulated with associated costing for Consideration of Completion.
If Work is deemed incomplete by Owner, complete outstanding items and request re-inspection.
Defective products will be rejected, regardless of previous inspections. Replace products at own expense.

1.83 MAINTENANCE AND RECORD DOCUMENTS

The following shall be submitted to the owner at completion of Work:

1. Maintenance manuals for, but not limited to, operating instructions, maintenance manuals, record of "as built" drawings, spare parts, maintenance of materials, special tools for completeness.
2. Record of substantial and project completion correspondence inclusive, but not limited to contractor lists, Owner tabulations and certificates.
3. Compile all shop drawings that have been submitted.

1.84 RECORDING ACTUAL SITE CONDITIONS

Submit Actual Conditions as outlined in following sentences.
Record information on set of Project Specifications provided by Owner.
Provide felt tip marking pens, maintaining separate colours for each major system, for recording information.
Record information concurrently with construction progress. Do not conceal Work until required information is recorded.
Contract Drawings and shop drawings: legibly mark each item to record actual construction, including:

1. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
2. Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
3. Field changes of dimension and detail.
4. Changes made by change orders.
5. Details not on original Contract Drawings.
6. References to related shop drawings and modifications.

Specifications: legibly mark each item to record actual construction, including:

7. Manufacturer, trade name, and catalogue number of each product actually installed particularly optional items and substitute items.
8. Changes made by Addenda and change orders.

1.85 WARRANTIES AND BONDS

Separate warranties or bonds with index tab sheets keyed to Table of Contents listing.
List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after certification of completion.
Verify that documents are in proper form, contain full information, and are notarized.
Co-execute submittals when required.
Retain warranties and bonds until time specified for submittal.
Bonds will be provided if requested by owner

1.86 FORMAT

Organize data in the form of an instructional manual:

1. Digital format of all required documents, manufacturer's data sheets, drawings, etc.

1.87 CONTRACT CLOSE-OUT

Expedite and complete deficiencies and defects identified by the Owners.
Submit the required documentation from all regulating bodies:

1. Statutory Declarations
2. Workers' Compensation Certificates

3. Warranties
4. Certificates of Approval or Acceptance

Establish a schedule with the Owner for the completion of the work. Complete work and correct deficiencies including those listed during the Owner site reviews.
Review inspection and testing reports to verify conformance to the intent of the documents and those changes, repairs or replacements have been completed.
Provide on-going review, inspection, and attendance to building, call-back, maintenance and repair problems during Warranty periods.
Provide warranties and bonds fully executed and notarized.
Execute transition of Performance of Labour and Materials Payment Bond to warranty period requirements.
Collect and assemble documents executed by Subcontractors, suppliers, and manufacturers.
Submit an application for final payment to the Owner, when project is deemed complete, and all previously identified deficiencies are corrected.

END OF SECTION

This page left blank intentionally

GENERAL

1.88 RELATED REQUIREMENTS

This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.89 REFERENCES

Definitions:

1. Demolition: rapid destruction of building following removal of hazardous materials.
2. Hazardous Materials: dangerous substances, dangerous goods, hazardous commodities and hazardous products, may include but not limited to asbestos PCB's, CFC's, HCFC's poisons, corrosive agents, flammable substances, ammunition, explosives, radioactive substances, or other material that can endanger human health or well-being or environment if handled improperly.
3. Waste Audit (WA): detailed inventory of materials in building. Indicates quantities of reuse, recycling and landfill.
    1. Involves quantifying by volume/weight amounts of materials and wastes generated during construction, demolition, deconstruction, or renovation project.
    2. Indicates quantities of reuse, recycling and landfill.
4. Waste Management Coordinator (WMC): contractor representative responsible for supervising waste management activities as well as coordinating related, required submittal and reporting requirements.
5. Waste Reduction Workplan (WRW): written report which addresses opportunities for reduction, reuse, or recycling of materials. WRW is based on information acquired from WA.

Canadian Federal Legislation

6. Canadian Environmental Protection Act (CEPA)
7. Canadian Environmental Assessment Act (CEAA)
8. Transportation of Dangerous Goods Act (TDGA)
9. Motor Vehicle Safety Act (MVSA)
10. Occupational Health and Safety Act

Health Canada/Workplace Hazardous Materials Information System (WHMIS)

11. Material Safety Data Sheets (MSDS).

Transport Canada (TC)

12. Transportation of Dangerous Goods Act, 1992 (TDGA), c. 34.

1.90 QUALITY ASSURANCE

Regulatory Requirements: Ensure all work is performed in compliance with CEPA, CEAA, TDGA, MVSA, and all applicable provincial regulations.

1.91 ACTION AND INFORMATIONAL SUBMITTALS

Submit in accordance with Section 01 33 00, Submittal Procedures.

Shop Drawings:

1. Submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada.
2. Submit for approval drawings, diagrams or details showing sequence of demolition work and supporting structures and underpinning, where required by authorities having jurisdiction.

Hazardous Materials:

3. Provide description of Hazardous Materials and Notification of Filing with proper authorities prior to beginning of Work as required.

1.92 DELIVERY, STORAGE AND HANDLING

Protect existing items designated to remain and items designated for salvage. In event of damage to such items, immediately replace or make repairs to approval of Owner and at no cost to Owner.

Remove and store materials to be salvaged, in manner to prevent damage.

Store and protect in accordance with requirements for maximum preservation of material.

In all circumstances ensure that demolition work does not adversely affect adjacent watercourses, groundwater and wildlife, or contribute to excess air and noise pollution.

Do not dispose of waste of volatile materials such as, mineral spirits, oil, petroleum based lubricants, or toxic cleaning solutions into watercourses, storm or sanitary sewers. Ensure proper disposal procedures are maintained throughout the project.

Do not pump water containing suspended materials into watercourses, storm or sanitary sewers or onto adjacent properties.
Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authorities.
Protect trees, plants and foliage on site and adjacent properties where indicated.

1.93 EXISTING CONDITIONS

Prior to the start of any demolition work remove contaminated or hazardous materials from site and dispose of at designated disposal facilities.

1.94 SCHEDULING

Ensure project timelines are met without compromising specified minimum rates of material diversion. Notify Owner of delays.

PRODUCTS (NOT USED)

EXECUTION

1.95 PREPARATION

Inspect site with Owner and verify extent and location of items designated for removal, disposal, alternative disposal, recycling, salvage and items to remain.
Locate and protect utilities. Preserve active utilities traversing site in operating condition.
Notify and obtain approval of utility companies before starting demolition.

1.96 REMOVAL OF HAZARDOUS WASTES

Remove contaminated or dangerous materials defined by authorities having jurisdiction, relating to environmental protection, from site and dispose of in safe manner to minimize danger at site or during disposal.

1.97 REMOVAL OPERATIONS

Remove items as indicated.
Do not disturb items designated to remain in place.
Removal of pavements, curbs and gutters:

1. Square up adjacent surfaces to remain in place by saw cutting or other method approved by Owner.
2. Protect adjacent joints and load transfer devices.
3. Protect underlying and adjacent granular materials.
4. Remove only as many trees as required during demolition. Obtain written approval of Owner prior to removal of any trees not designated.

Prevent contamination with base course aggregates, when removing asphalt pavement for subsequent incorporation into hot mix asphalt concrete paving,
Salvage

5. Carefully dismantle items containing materials for salvage and stockpile salvaged materials at locations acceptable to owner and Owner.

Disposal of Material

6. Dispose of materials not designated for salvage or reuse on site to be hauled to an authorized disposal site and or recycling facilities.

Backfill

7. Backfill in areas as indicated.

1.98 STOCKPILING

Label stockpiles, indicating material type and quantity.
Designate appropriate security resources/measures to prevent vandalism, damage and theft.
Locate stockpiled materials convenient for use in new construction to eliminate double handling wherever possible.
Stockpile materials designated for alternate disposal in location which facilitates removal from site and examination by potential end markets, and which does not impede disassembly, processing, or hauling procedures.

1.99 REMOVAL FROM SITE

Interim removal of stockpiled material will be required by Owner, if it is deemed to interfere with operations of other contractors.
Remove stockpiles of like materials by an alternate disposal option once collection of that material is complete.

1.100 RESTORATION

Restore areas and existing works outside areas of demolition to match condition of adjacent, undisturbed areas.
Use only soil treatments and procedures which are not harmful to health, are not injurious to plants, and do not endanger wildlife, adjacent water courses or ground water.

1.101 CLEANUP

Progress Cleaning:

1. Leave Work area clean at end of each day.
2. Remove debris, trim surfaces and leave work site clean, upon completion of Work
3. Use cleaning solutions and procedures which are not harmful to health, are not injurious to plants, and do not endanger wildlife, adjacent water courses or ground water.

1.102 PROTECTION

Repair damage to adjacent materials or property caused by selective site demolition.

END OF SECTION

This page left blank intentionally

PART 1 - General

1.1 RELATED SECTIONS

1.1.1 Section 01 11 00 – Summary of Work

1.1.2 Section 07 52 00 – Modified Bituminous Membrane Roofing

1.2 APPLICABLE PUBLICATIONS

1.2.1 All codes, standard specifications and by-laws referred to in this section shall be current editions including all revisions, addenda and supplements.

1.2.2 ALSC (American Lumber Standards Committee) – Softwood Lumber Standards

1.2.3 APA (American Plywood Association) Product Guide – Grades and Specifications

1.2.4 AWPA (American Wood Preservers Association) C1 – All Timber Products Pressure Treatment

1.2.5 AWPA (American Wood Preservers Association) C20 – Structural Lumber Fire Retardant Pressure Treatment

1.2.6 CSA B111 – Wire Nails, Spikes and Staples

1.2.7 CAN/CSA-G164-M – Hot Dip Galvanizing of Irregularly Shaped Articles

1.2.8 CAN/CSA O121-M – Douglas Fir Plywood

1.2.9 CAN/CSA O141 – Softwood Lumber

1.2.10 CAN/CSA O151-M – Canadian Softwood Plywood

1.2.11 CAN/CSA O325.0 – Construction Sheathing

1.2.12 NLGA (National Lumber Grades Authority) – Standard Grading Rules for Canadian Lumber

1.2.13 NFPA (National Forest Products Association) – Grading Rules

1.3 QUALITY ASSURANCE

1.3.1 Lumber identification shall be by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.

1.3.2 Plywood identification shall be by grade mark in accordance with applicable CSA standards.

1.3.3 Plywood, OSB and wood based composite panel construction sheathing identification shall be by grademark in accordance with applicable CSA standards.

1.3.4 At all times during the Work, the Contractor will have on site a qualified project supervisor. It will be the Supervisor's responsibility to ensure that the Work is carried out in an efficient manner, according to the Plans and Specifications.

1.3.5 Mock-up of exposed carpentry will be made available for the review of the Owner and Owner if composite lumber is used. This may be submitted by partial constructed components.

1.4 DELIVERY, STORAGE, AND HANDLING

1.4.1 Protect lumber and other products from dampness both during and after delivery at site.

1.4.2 Pile lumber in stacks in such manner as to provide air circulation around surfaces of each piece.

1.4.3 Stack plywood and other board products so as to prevent warping.

1.4.4 Locate stacks on well drained areas, supported at least 152 mm (6”) above grade and cover with well-ventilated sheds having firmly constructed over hanging roof with sufficient end wall to protect lumber from driving rain.

1.5 WASTE MANAGEMENT AND DISPOSAL

1.5.1 Set aside damaged wood and dimensional lumber off-cuts for acceptable alternative uses (e.g. bracing, blocking, cripples, bridging, finger-joining, or ties). Store this separated reusable wood waste convenient to cutting station and area of work.

1.5.2 Separate and recycle waste materials in accordance with applicable local, provincial and national regulations. Include for tipping fees associated with landfills and recycling depots

1.5.3 Unused preservatives and fire retardant materials are to be diverted from landfill through disposal at a special wastes depot.

1.5.4 Do not burn scrap at the project site.

1.5.5 Fold up metal banding, flatten, and place in designated area for recycling.

PART 2 - Products

2.1 LUMBER MATERIALS

2.1.1 Materials shall be best merchantable lumber, straight and sized and shaped to correct dimensions from nominal sizes noted on drawings. Lumber shall be selected from well-seasoned stock, free from loose resinous knots, shakes, waxed edges, splits, dry rot or other defects which would impair the strength or durability.

2.1.2 Lumber in accordance with the following standards:

1. CAN/CSA O141

2. NLGA Standard Grading Rules for Canadian Lumber

2.1.3 Unless specified otherwise all framing members shall be No.1/No.2 SPF.

2.1.4 All materials directly exposed to the exterior shall be pressure treated unless noted otherwise on drawings or elsewhere in specification.

2.1.5 Furring, blocking, nailing strips, grounds, rough bucks, cants, curbs, fascia backing and sleepers shall be pressure treated.

2.1.6 Polyvinyl or Polyurethane lumber to be of accepted Proprietary Manufacturer.

2.1.7 Moisture Content:

1. At time of delivery and maintained at the site.
2. Boards and lumber 51 mm (2”) and less in thickness: 19% or less.
3. Lumber over 51 mm (2”) thick: 25% or less.

2.1.8 Fire Retardant Treatment:

1. Military Specification, MIL-L-19140E with piece of treated material bearing identification of testing agency and showing performance rating.
2. Treatment and performance inspection, by an independent and qualified testing agency that establishes performance ratings.

2.1.9 Preservative Treatment:

1. Do not treat Heart Redwood and Western Red Cedar.
2. Treat wood members and plywood exposed to weather or in contact with plaster, masonry or concrete, including framing of open roofed structures; sills, sole plates, furring, and sleepers that are less than 610 mm (24”) from ground; nailers, edge strips, blocking, crickets, curbs, cant, vent strips and other members used in connection with roofing and flashing materials.
3. Treat other members specified as preservative treated (PT).
4. Preservative treat by the pressure method complying with ASTM D1760, except any process involving the use of Chromate Copper Arsenate (CCA) for pressure treating wood is not permitted.

2.2 EXTERIOR CARPENTRY

2.2.1 Decking:

1. Stained Western: Red Cedar
2. Painted: Douglas Fir
3. Polyvinyl or Polyurethane composite decking
    1. Unideck by Palatin Universal Corporation
    2. Life Long by Brite Millwork
4. Decking lengths
    1. 1.8 to 6 m or longer with a minimum of 90% planks exceeding 3 m, square end trimmed.
    2. For single spans shorter than 3 m use decking of same length as span.

2.2.2 Railings:

1. Stained: Western Red Cedar

2. Painted: Douglas Fir

3. Polyvinyl or Polyurethane composite railings: Premier railings by Composatron

2.2.3 Fencing:

1. Stained: Western Red Cedar

2. Painted: Douglas Fir

3. Polyvinyl or Polyurethane composite fencing

1. Unifence by Palatin Universal Corporation

2. Life Long by Brite Millwork

2.2.4 Fascia, Freeze Boards and associated moldings:

1. Stained: Western Red Cedar

2. Painted: Douglas Fir

3. Polyvinyl or Polyurethane composite decking

1. Unifence by Palatin Universal Corporation

2. Life Long by Brite Millwork

2.3 PANEL MATERIALS

2.3.1 Douglas fir plywood (DFP): to CAN/CSA O121, standard construction.

2.3.2 Canadian softwood plywood (CSP): to CAN/CSA O151, standard construction.

2.3.3 Plywood, OSB and wood based composite panels: to CAN/CSA-O323.

2.3.4 Underlayments shall be 6 mm (1/4”) Mahogany unless noted otherwise on drawings or in specification.

2.3.5 Where T&G Plywood is specified, it shall be Douglas Fir with solid fir veneer core.

2.3.6 Where waterproof plywood is specified, it shall be pressure treated Spruce plywood sheathing with solid veneer core.

2.4 ACCESSORIES

2.4.1 toggle bolts for anchorage to hollow masonry and gypsum walls.

2.4.2 expansion shields and lag bolts for anchorage to solid masonry or concrete.

2.4.3 explosive actuated fastening devices where specified on drawings only.

2.4.4 screws for attachment of decking to joists and sleepers

2.4.5 Splines

1. douglas fir

2. galvanized metal

3. use recommendation of manufacturer on proprietary elements where it differs from specification.

2.4.6 Fasteners for Composite Materials: Corrosion resistant coated to match colour.

2.5 ACCESSORY FINISHES

2.5.1 Galvanizing to CAN/CSA G164:

1. galvanized fasteners for all exterior work unless otherwise specified

2. galvanized fasteners for all high interior humid areas unless otherwise specified

2.5.2 Use stainless steel type 304 where noted on drawings

2.6 WOOD PRESERVATIVE

2.6.1 All wood exposed to exterior environmental conditions, in contact with concrete or masonry shall be treated with roof preservative.

2.6.2 Wood treated with preservative by pressure impregnation to CAN/CSA-080.

2.6.3 Upon request submit following information:

1. Moisture content after drying.

2. information listed in AWPA.M2 and revisions specified in CAN/CSA-080 series, Supplementary Requirements to AWPA Standard M2 applicable to specified treatment.

2.6.4 Surface-applied wood preservative: Chromate Copper Arsenate (CCA)

PART 3 - Execution

3.1 PREPARATION

3.1.1 Comply with safety regulations and applicable by-laws governing work included in this section. Provide and maintain necessary barriers, guards and rails.

3.2 SITE APPLIED WOOD TREATMENTS

3.2.1 Treat ends of site cut surfaces of materials delivered to site with wood preservative.

3.2.2 Re-treat surfaces exposed by cutting, trimming or boring with liberal brush application of preservative before installation.

3.3 INSTALLATION

3.3.1 Comply with OBC's requirements, supplemented by the following paragraphs.

3.3.2 Install furring and blocking as required to space-out and support casework, cabinets, wall and ceiling finishes, facings, fascia, soffit, siding and other work as required.

3.3.3 Align and plumb faces of furring and blocking to tolerance of 1:600.

3.3.4 Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other work.

3.3.5 Install wood cants, fascia backing, nailers, curbs and other wood supports as required and secure with adequate fasteners.

3.3.6 Install wood backing, dressed, tapered and recessed slightly below top surface of roof insulation for roof hopper.

3.3.7 Install sleepers as indicated.

3.4 ERECTION (FOR RE-ROOFING)

3.4.1 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.

3.4.2 Carpentry alterations will be performed to accepted trade practice.

3.4.3 Before proceeding, installation of vapour retarders is to be in place.

3.4.4 Add new wood blocking to maintain minimum heights at perimeters and curbs. The minimum height above the finished roof at curb locations and at wall bases shall be 203 mm (8"). The minimum height at parapets shall be 152mm (6") above the finished roof.

3.4.5 Replace any damaged and/or deteriorated wood at perimeters and projections with new exterior grade wood blocking as specified. Determination of the suitability to re-use or replace existing wood to be at the sole discretion of the Owner.

1. Ensure existing wood blocking remaining at perimeters and curbs is securely fastened to existing substrate before installing any new blocking.

3.4.6 Install new wood blocking as required to ensure that all curbs and sleepers for H.V.A.C. and mechanical equipment are level.

3.4.7 All new and existing wood blocking and plywood is to be considered part of the roof and to be made watertight by the end of each working day to eliminate moisture infiltration into the roof system.

3.4.8 All fasteners to be flush or slightly sunk with surface of wood blocking being secured where possible to provide clearance for other work.

3.4.9 Install new wood blocking and/or cant strips to accommodate slopes and insulation, roofing, and sheet metal as shown on drawings.

3.4.10 Fasteners shall be installed at 305 mm (12”) on centre staggered for wood to wood, wood to metal, wood to masonry or concrete.

3.5 ERECTION (FOR NEW CONSTRUCTION)

3.5.1 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.

3.5.2 Carpentry alterations will be performed to accepted trade practice.

3.5.3 Contractor to install wood blocking as required to ensure that all curbs and sleepers for H.V.A.C. and mechanical equipment are level.

3.5.4 All wood blocking and plywood is to be considered part of the roof, and to be made watertight by the end of each working day to eliminate moisture infiltration into the roof system.

3.5.5 All fasteners to be flush or slightly sunk with surface of wood blocking being secured where possible.

3.5.6 As indicated on drawings install blocking and cant strips to accommodate slopes and insulation, roofing, and sheet metal.

3.5.7 Wood to wood, wood to metal, wood to masonry or concrete to be secured at 305 mm (12”) on center staggered.

END OF SECTION

This page left blank intentionally

PART 1 - General

1.1 RELATED SECTIONS

1.1.1 Section 01 11 00 – Summary of Work

1.1.2 Section 06 10 00 – Rough Carpentry

1.1.3 Section 07 62 00 – Sheet Metal Flashing and Trim

1.1.4 Section 07 92 00 – Joint Sealants

1.2 THIS SECTION INCLUDES

1.2.1 Labour, products, equipment, and services necessary for thermoplastic-polyolefin (TPO) roofing Work in accordance with the Contract Documents.

1.2.2 Include materials and fitments required for the operation of any unit furnished, in the manner, direction and performance shown on the Shop Drawings and specified in this Section.

1.3 REFERENCES

1.3.1 All codes, standard specifications and by-laws referred to in this section shall be current editions including all revisions, addenda and supplements.

1.3.2 ASTM C578 – Rigid, Cellular Polystyrene Thermal Insulation

1.3.3 ASTM C1396/C1396M – Standard Specification for Gypsum Board

1.3.4 CAN/ULC S701 – Thermal Insulation, Polystyrene, Boards and Pipe Covering

1.3.5 Factory Mutual (FM) – Roof Assembly Classifications

1.3.6 Ontario Industrial Roofing Contractors Association (OIRCA) – Roofing Specifications Manual

1.3.7 National Roofing Contractors Association (NRCA) – Roofing and Waterproofing Manual

1.3.8 Underwriters Laboratories of Canada (ULC) – List of Equipment and Materials for Building Materials, Fire Resistance, and Fire-stop Systems and Components

1.3.9 Conform to National Plumbing Codes and requirements of Provincial and Municipal Authorities. Most stringent requirements shall govern where in conflict.

1.4 SUBMITTALS

1.4.1 Section 01 33 00 – Submittal Procedures.

1.4.2 Provide initial schedule within five (5) working days after Contract award, showing anticipated progress stages and final completion of work. Work shall not commence before work schedule is provided.

1.4.3 Product Data: Provide characteristics on membrane materials, flashing materials, insulation, vapour retarders, and deck overlay board.

1.4.4 Where UL or FM requirements are specified provide documentation that shows that the roofing system to be installed is UL-classified and FM-approved as applicable

1.4.5 Provide manufacturer's installation instructions, marked-up to show exactly how all components are to be installed. Where instructions allow installation options, clearly indicate which option will be used.

1.4.6 Submit shop drawings for tapered insulation layout, if specified, to the Owner for review prior to prefabrication. Shop Drawings shall be approved and signed by TPO roofing membrane manufacturer's representative.

1.4.7 Sample copy of Manufacturer's warranty

1.4.8 Sample copy of Contractor's warranty

1.4.9 Submit two (2) samples of TPO membrane, 1'-0" x 1'-0" (300 mm x 300 mm) in size.

1.4.10 Certifications by manufacturers of roofing and insulating materials that all materials supplied comply with all requirements of the identified ASTM and other industry standards or practices.

1.4.11 Certification from the Contractor that the system specified meets all identified code and insurance requirements as required by the Specification.

1.4.12 Material Safety Data Sheets (MSDS)

1.4.13 Inspection Reports: Upon completion of the Work, submit copies of the manufacturer's final inspection to the Consultant prior to the issuance of the manufacturer's warranty.

1.4.14 Upon Owner's request, submit the following Certificates:

1. Submit a letter of certification from the manufacturer certifying that the Subcontractor is authorized to install the specified roofing system and lists foremen who have received training from the manufacturer along with the dates training was received.

2. Certification from the membrane manufacturer indicating the fasteners are capable of providing a static back-out resistance of 10"/lbs minimum.

3. Certification from the membrane manufacturer indicating the membrane thickness over the reinforcing scrim (top ply membrane thickness) is nominal .15 mil or thicker.

4. Certification of the manufacturer's warranty reserve.

1.4.15 Closeout Submittals

1. Submit three (3) copies of roofing manufacturer's recommended inspection and maintenance procedures for inclusion in the Operations and Maintenance Manual.

2. Warranty information.

1.5 QUALITY ASSURANCE

1.5.1 Perform Work in accordance with manufacturer's written instructions and as specified.

1.5.2 The Contractor shall arrange for a technical representative of the manufacturer to review the installed roof system wherever a Standard or System Warranty has been specified. Pre-Installation Notice (PIN): Submit copy to show that manufacturer's required PIN has been accepted and approved by the manufacturer.

1.5.3 There shall be no deviation made from the Project Specification or the approved shop drawings without prior written approval by the Owner.

1.6 QUALIFICATION

1.6.1 Contractor must be certified by the membrane manufacturer and pre-approved by the Owner prior to tender.

1.6.2 Contractor must be a member in good standing with the Ontario Industrial Roofing Contractors Association (OIRCA) and have a minimum ten (10) years relevant experience with similar roof materials.

1.6.3 Roofing Applicator shall provide adequate number of experienced workmen regularly engaged in this type of work who are skilled in the application techniques of the materials specified. Provide at least one (1) fully trained and experienced superintendent on the Project at all times roofing Work is in progress.

1.6.4 Each Applicator shall be trained and approved by the TPO roofing membrane manufacturer.

1.6.5 Roofing Applicator shall have successful experience installing single-ply TPO roofing systems and have installed at least two (2) roofing applications of equal or greater size within the last year.

1.7 REGULATORY REQUIREMENTS

1.7.1 Conform to applicable local code for roof assembly fire hazard requirements.

1.7.2 UL: Class B Fire Hazard Classification.

1.7.3 FM: Roof Assembly Classification, of Class 1 Construction, wind uplift requirement of 1-90, in accordance with FM Construction Bulletin 128.

1.7.4 Roof assembly to comply with CSA A123.21, Standard Test Method for the Dynamic Wind Uplift Resistance of Membrane – Roofing Systems.

1.7.5 Roof assembly to comply with ANSI/SPRI WD-1, Wind Design Standard Practice for Roofing Assemblies.

1.7.6 Comply with ASTM D6878/D6878M, Standard Specification for Thermoplastic Polyolefin Based Sheet Roofing

1.7.7 Comply with CAN/ULC S704, Standard for Thermal Insulation, Polyurethane and Polyisocyanurate, Boards, Faced

1.7.8 Complete roof assembly shall meet CAN/ULC S107, Class A.

1.7.9 TPO white membrane shall meet the Cool Roof Rating Council (CRRC) for reflectance and emittance.

1. When tested in accordance with ASTM C1549, the white material shall have an initial solar reflectance of 0.77 and a three (3) year aged reflectance of 0.70.

2. The material shall have been tested for emittance in accordance with ASTM C1371. An initial emittance of 0.87 and a three (3) year aged emittance of 0.86 shall have been achieved.

1.7.10 Inspection: Upon completion of the installation, the Contractor shall arrange for inspection to be made by a non-sales, technical representative of the membrane manufacturer, to determine whether or not corrective Work will be required before the warranty may be issued. Notify the Consultant seventy-two (72) hours prior to the manufacturer's final inspection.

1.7.11 Pre-installation Conference:

1. Convene a pre-installation conference at the Site, one (1) week prior to commencing Work of this Section. Require attendance of parties directly affecting Work of this Section including, but not limited to, the Owner's representative, Consultant, Contractor, roofing applicator, and job foreman, plumber, and roofing manufacturer's representative.

2. Contact Consultant and Owner two (2) weeks prior to pre-installation conference to confirm schedule.

3. Record discussions of pre-installation conference and decisions and agreements (or disagreements) reached and furnish copy of record to each party attending.

4. Review foreseeable methods and procedures related to roofing Work including, but not limited to, the following:

    1. Tour, inspect, and discuss condition of substrate, roof drains, roof drain final locations, curbs, penetrations, expansion joints, and other preparatory Work performed by other Sections.

    2. Review preparation and installation procedures and coordinating and scheduling required with related Work.

    3. Review structural loading limitations of deck and inspect deck for loss of flatness.

    4. Review roofing system requirements (Drawings, Specifications, and other Contract Documents).

    5. Review required submittals, both completed and yet to be completed.

    6. Review and finalize construction schedule related to roofing Work and verify availability of materials, installer's personnel, equipment, and facilities needed to make progress and avoid delays.

    7. Review required inspections, testing, certifying, and material usage accounting procedures.

    8. Review weather and forecasted weather conditions, and procedures for coping with unfavourable conditions, including possibility of temporary roofing (if not a mandatory requirement).

1.7.12 Mock-Up:

1. Prepare mock-up in accordance with Section 01 43 00.

2. Provide 10’-0” x 10’-0” (3 m x 3 m) mock-up of roof membrane system and associated components including vapour retarder, air seal lap at perimeter, insulation, and typical base and counter flashings.

3. Location where directed by Consultant or Owner.

4. Approved mock-up may remain as part of the Work.

1.8 SPECIAL SITE INSTRUCTIONS

1.8.1 Interior Protection for Work to be done by Contractor.

1.8.2 Staging area to be determined on site with Building Owner.

1.9 DELIVERY, STORAGE, AND HANDLING

1.9.1 All work to be conducted from the exterior using swing-stage, hoist, etc.

1.9.2 Site storage is limited. Location of storage to be coordinated with Owner.

1.9.3 Coordinate deliveries to comply with construction schedule and arrange ahead for off-the-ground, under cover storage location. Do not load any area beyond the design limits.

1.9.4 Deliver materials undamaged in original containers with manufacturer’s labels and seals intact.

1.9.5 Handle and store materials carefully to prevent damage. Store in original containers and keep manufacturer's labels and seals intact. Store roofing rolls on end to prevent flattening.

1.9.6 Protect roofing materials from inclement weather. Keep insulation and roofing membrane dry. Remove only as much from storage as can be applied, made weathertight, and covered with roofing in same day. Insulation shall be fully tarped and protected from water infiltration. Materials found to be damp at time of installation or showing signs of having been damp or exposed to moisture shall be rejected.

1.9.7 Protect the Work of other Sections from soiling or damage during the application of the roofing materials and make good damage caused by these operations, to the approval of the Consultant at no additional cost to the Contract.

1.9.8 Keep roofing materials dry, stored off ground, and well ventilated.

1.9.9 Store rolls of membrane on end, in vertical position without leaning, and with selvage end up.

1.9.10 Store materials away from direct heat, open flame, or sparks.

1.9.11 For installation in cold weather, store rolls of roofing materials in heated storage area for minimum of twenty-four (24) hours with the temperature kept at 21°C and remove for application with as little exposure as possible to low ambient temperatures.

1.9.12 Hang tarpaulins to protect walls where hoisting is necessary.

1.9.13 Store curable materials (adhesives and sealants) between 15°C and 27°C (60°F and 80°F) in dry areas protected from water and direct sunlight. If exposed to lower temperature, restore to 15°C (60°F) minimum temperature before using.

1.9.14 Store materials containing solvents in dry, well-ventilated spaces with proper fire and safety precautions. Keep lids on tight. Use before expiration of their shelf life.

1.9.15 Insulation must be on pallets, off the ground and tightly covered with waterproof materials. Store and handle insulation to prevent broken edges and corners, punctures indentations, or other damage.

1.9.16 Materials which are found to be damaged shall be removed and replaced at the contractor's expense.

1.9.17 Do not store more than one (1) Day's supply of materials on the roof at any time. On roof, stack materials on pallets and completely cover with incombustible waterproof tarpaulin whenever Work is interrupted or when there is precipitation of any kind. Securely tie covering to pallets in such way as to be weathertight. Plastic covers and shrink-wrap covers by manufacturers are not acceptable for site storage and shall be removed upon delivery to the roof.

1.9.18 Distribute materials stored on roof to stay within designated live load limits of the roof construction. Provide ample bases under equipment and materials to distribute weight to conform to these live-load limits. Do not store materials on, or transport materials across, completed roof areas.

1.9.19 Provide fire extinguishers at each installation and storage location, of proper type for materials being used and stored.

1.9.20 Handle and store products in a manner to prevent damage and deterioration.

1.9.21 Remove and replace damaged products at own expense and to the satisfaction of the Owner.

1.10 ENVIRONMENTAL REQUIREMENTS

1.10.1 Do not apply roofing membrane during inclement weather or when ambient conditions are below, or above temperatures recommended by the membrane manufacturer.

1.10.2 Do not apply roofing membrane to damp or frozen deck surface.

1.10.3 Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed during same Day.

1.10.4 Smoking shall be prohibited in area of roofing application.

1.10.5 Only as much of the new roofing as can be made weather-tight each day, including all flashing and detail work, shall be installed.

1.10.6 All work shall be scheduled and executed without exposing the interior building areas to the effects of inclement weather. The existing building and its contents shall be protected against all risks.

1.10.7 All new and temporary construction, including equipment and accessories, shall be secured in such a manner as to preclude wind blow-off and subsequent roof or equipment damage.

1.10.8 Uninterrupted water-stops shall be installed at the end of each day's work and shall be completely removed before proceeding with the next day's work. Water-stops shall not emit dangerous or unsafe fumes and shall not remain in contact with the finished roof as the installation progresses. Contaminated membrane shall be replaced at no cost to the Owner.

1.10.9 Arrange work sequence to avoid use of newly constructed roofing as a walking surface or for equipment movement and storage. Where such access is absolutely required, the Contractor shall provide all necessary protection and barriers to segregate the work area and to prevent damage to adjacent areas. A substantial protection layer consisting of plywood over felt or plywood over insulation board shall be provided for all new and existing roof areas that receive rooftop traffic during construction.

1.10.10 Prior to and during application, all dirt, debris and dust shall be removed from surfaces by vacuuming, sweeping, blowing with compressed air, and/or similar methods.

1.10.11 The Contractor shall follow all safety regulations as required by OHSA (Occupational Health and Safety Act) and any other applicable authority having jurisdiction.

1.10.12 All roofing, insulation, flashings and metal work removed during construction shall be immediately taken off site to a legal dumping area authorized to receive such materials. Hazardous materials, such as materials containing asbestos, are to be removed and disposed of in strict accordance with applicable Municipal, Provincial, and Federal requirements.

1.10.13 All new roofing waste material (i.e. scrap roof membrane, empty cans of adhesive) shall be immediately removed from the site by the Contractor and properly transported to a legal dumping area authorized to receive such material.

1.10.14 Flammable adhesives and deck primers shall not be stored and not be used in the vicinity of open flames, sparks and excessive heat.

1.10.15 All rooftop contamination that is anticipated or that is occurring shall be reported to the manufacturer to determine the corrective steps to be taken.

1.10.16 The Contractor shall verify that all roof drain lines are functioning correctly (not clogged or blocked) before starting work. Contractor shall report any such blockages in writing to the Owner's Representative for corrective action prior to the installation of the roof system.

1.10.17 The Contractor shall immediately stop work if any unusual or concealed condition is discovered and shall immediately notify Owner of such condition in writing for correction at the Owner's expense.

1.10.18 Site cleanup, including both interior and exterior building areas that have been affected by construction, shall be completed to the Owner's satisfaction.

1.10.19 All landscaped areas damaged by construction activities shall be repaired at no cost to the Owner.

1.10.20 Precautions shall be taken when using adhesives at or near rooftop vents or air intakes. Adhesive odours could enter the building. Coordinate the operation of vents and air intakes in such a manner as to avoid the intake of adhesive odour while ventilating the building. Keep lids on unused cans at all times.

1.10.21 Protective wear shall be worn when using solvents or adhesives or as required by job conditions.

1.11 COORDINATION

1.11.1 Roof Contractor to coordinate with General Contractor and Sub-trades to ensure all mechanical, electrical, and plumbing work is completed in accordance with drawings, specifications and as required to meet the design intent for the project.

1.11.2 Contractor shall provide interior protection as required for the duration of the project.

1.11.3 Contractor shall provide own Power, Water, and washroom facilities.

1.11.4 Minimize disruptions to regular building activities. Noisy Work to be performed outside of regular office/operating hours. Arrange special access and times to project site with the Owner.

1.11.5 Contractor shall arrange staging area on site with the Owner.

1.11.6 All salvaged copper flashings, cleats, hook strips, and all copper related components from the designated roof replacement areas to be recycled and subsequent value credited to the Owner.

1.11.7 Contractor shall arrange site meeting with the Owner no more than three weeks prior to commencement of work on site. Contractor is to provide the following to the Owner at this meeting:

1. Notice of Project
2. A sample copy of the Warranty
3. A copy of the letter and completed project warranty form sent to the “Warranty Holder” advising them of the project starting
4. Insurance in the Owner’s Name
5. WSIB Clearance Certificate
6. A Contact List complete with 24-hour emergency phone numbers
7. A Work Schedule listing start date, number of working days and manpower for the project shop drawings for tapered insulation, if applicable
8. A complete Material List
9. MSDS information pertaining to ALL materials being used on site
10. The appropriate securement patterns for mechanically fastening of the insulation, if applicable
11. A list of the “Trained and Carded Membrane Approved Applicators” who will be working on site

1.11.8 Cooperate with the Owner and afford all facilities necessary to permit full observation of the work. Carry out remedial work immediately on instructions given by the Owner.

1.11.9 Make cut-outs when required and make good roofing without additional costs to the Owner.

1.12 WARRANTY

1.12.1 Contractor shall supply the Owner with a two (2) year Contractor OIRCA Warranty for workmanship. In the event any work related to roofing, flashing, or metal is found to be within the Contractor warranty term, defective or otherwise not in accordance with the Contract Documents, the Contractor shall repair that defect at no cost to the Owner. The Applicator's warranty obligation shall run directly to the Owner, and a copy shall be sent to the manufacturer.

1.12.2 Contractor shall provide the Owner with a **twenty (20)** year Manufacturer's Labour, Material and Workmanship System Warranty.

1.12.3 Contractor shall provide the Owner with a **twenty (20)** year Manufacturer's Labour, Material and Workmanship NDL (No Dollar Limit) System Warranty.

1.12.4 Owner shall notify both the membrane manufacturer and the Contractor of any leak that occurs during the time period when both warranties are in effect.

PART 2 - Products

2.1 GENERAL

2.1.1 All membrane materials shall be supplied by one manufacturer: Elevate (Formerly Firestone), Johns Manville, or approved equivalent meeting manufacturer's respective material compatibility requirements to achieve the required System Warranty.

2.1.2 Components to be used that are other than those supplied or manufactured by the membrane manufacturer may be submitted for review and acceptance by the membrane manufacturer.

2.1.3 The membrane manufacturer's acceptance of any other product is only for a determination of compatibility with the products and not for inclusion in the manufacturer's warranty.

2.1.4 The specifications, installation instructions, limitations, and/or restrictions of the respective manufacturers must be reviewed by the Owner's Representative for acceptability for the intended use with the membrane manufacturer's products.

2.2 VAPOUR RETARDER

2.2.1 Vapour Retarder Primer: Solvent based primer, Solvent-based, containing synthetic polymers and adhesion-enhancing resins. SA–Solvent Based (SB) Primer by Elevate (formerly Firestone) or **SA Primer by Johns Manville** or approved equivalent.

2.2.2 Retarder: V-Force Vapour Barrier Membrane by Elevate (formerly Firestone), **JM Vapour Barrier SA, JM Vapour Barrier SAR** or approved equivalent.

2.3 INSULATION BOARDS

2.3.1 Base Insulation: thick closed-cell polyisocyanurate foam core integrally bonded to inorganic coated glass facers insulation boards, Atlas ACFoam III polyisocyanurate by Atlas Roofing Corp., IKOTherm III by IKO, ENRGY 3 CGF by Johns Manville, or Sopra-ISO Plus by Soprema. Meeting the following requirements:

1. Approved and listed by Factory Mutual Global for Class 1-90 wind uplift classification and compressive strength of 20 psi, and meeting FM4470 approval requirements for Class 1 fire as a component in roof deck construction.

2.4 INSULATION SUMPS

2.4.1 Insulation Sump: 2.4 x 2.4 m (8' x 8') insulation sump with 610 x 610 mm (2' x 2') central flat is to be installed over the prepared substrate. New insulation sumps to run from 51 mm (2") in thickness at the outer edge down to 25 mm (1") at the central flat. Central flat to be 25 mm (1") thick.

2.5 TAPERED INSULATION

2.5.1 Tapered Insulation: Polyisocyanurate foam rigid insulation boards, Atlas ACFoam III polyisocyanurate by Atlas Roofing Corp., IKOTherm III by IKO, ENRGY 3 CGF by Johns Manville, or Sopra-ISO Plus by Soprema. Meeting the following requirements:

1. Approved and listed by Factory Mutual Global for Class 1-90 wind uplift classification and compressive strength of 20 psi, and meeting FM4470 approval requirements for Class 1 fire as a component in roof deck construction.

2. Unless otherwise noted on the roof plan drawings, the tapered insulation to have a slope of 1%; 0.125" (3mm) vertically per linear foot (305mm) horizontally.

3. Tapered insulation to be factory cut and mitred, and supplied by Accu-plane Enterprises Inc., Beacon Roofing Supply, Everest Supply Inc., or Posi-slope Enterprises Inc. Submit all shop drawings to the Owner for review prior to prefabrication.

2.6 INSULATION CRICKETS

2.6.1 Insulation Crickets: Polyisocyanurate foam rigid insulation boards, Atlas ACFoam III polyisocyanurate by Atlas Roofing Corp., IKOTherm III by IKO, ENRGY 3 CGF by Johns Manville, or Sopra-ISO Plus by Soprema.

2.7 OVERLAY BOARD

2.7.1 High-Density Polyisocyanurate Cover Board: Non-combustible, water-resistant high-density, closed-cell polyisocyanurate core with coated glass mat facers, complying with ASTM D 1623. Acceptable products:

1. ISOGARD HD Cover Board by Elevate roofing, wall, and lining systems.

2. ProtectoR HD by Johns Manville

3. DEXcell FA, or DensDeck Prime/Prime with Eonic.

2.8 ADHESIVES

2.8.1 As per manufacturer written instructions to meet the specified wind uplift requirements.

2.8.2 I.S.O. Twin Pack Insulation Adhesive by Elevate (formerly Firestone), One-Step Foamable Adhesive, or RSUA, by Johns Manville, or approved equivalent.

2.8.3 Bead Spacing: as required by roof membrane manufacturer for roofing system and warranty to be provided.

2.8.4 TPO Primer: Manufacturer’s standard. Solvent-based primer used to prepare the surface of the membrane prior to application of pressure-sensitive cover-strip and TPO pressure-sensitive system.

2.8.5 TPO Membrane and Flashing Bonding Adhesive: Neoprene and SBR rubber blend, formulated for compatibility with the membrane and other substrate materials, including masonry, wood, and insulation facings. Acceptable Products:

1. UltraPly Bonding Adhesive by Elevate (formerly Firestone).
2. Single Ply LVOC Bonding Adhesive by Elevate (formerly Firestone).
3. JM Membrane or All Season Sprayable Bonding Adhesive, by Johns Manville.
4. LVOC Membrane Adhesive by Johns Manville.

2.9 MEMBRANE

2.9.1 TPO Membrane (field): Flexible, heat weldable sheet composed of thermoplastic-polyolefin polymer and ethylene propylene rubber. In accordance with ASTM D6878. With polyester weft inserted reinforcement. **Membrane Thickness 80 mil.** Acceptable Products:

1. UltraPly TPO Platinum by Elevate (formerly Firestone).
2. JM TPO by John Manville.
3. Approved Equivalent.

2.9.2 Membrane Primer: as recommended by the manufacturer for the surface being adhered to.

2.10 MEMBRANE FLASHING AND ACCESSORIES

2.10.1 TPO Membrane Edge and Perimeter Securement:

1. Reinforced perimeter fastening strip. 6” (150 mm) wide membrane with 3” (75 mm) wide tape factory laminated along one (1) edge. Products:
    1. UltraPly QuickSeam RPF Strip by Elevate (formerly Firestone).
    2. JM TPO 6” RTS or JM TPO 10” RPS, by Johns Manville.
    3. Approved Equivalent.

2.10.2 TPO Curb and Parapet Flashing: Same material as field membrane, fully adhered with encapsulated edge which eliminates need for seam sealing the flashing-to-roof splice. Precut to 18” (457 mm) wide, or JM TPO Curb Flashing and JM TPO SA by Johns Manville.

2.10.3 TPO Formable Flashing: Non-reinforced, flexible, heat weldable sheet, composed of thermoplastic polyolefin polymer and ethylene propylene rubber. Colour: Same as field membrane. Acceptable Products:

1. Ultraply TPO Flashing by Elevate (formerly Firestone).
2. JM TPO Detail Membrane by John Manville.
3. Approved Equivalent.

2.10.4 TPO Tape Flashing: 6” (150 mm) nominal width, TPO membrane laminated to cured rubber polymer seaming tape. Acceptable Products:

1. TPO QuickSeam Flashing by Elevate (formerly Firestone).

2. JM TPO Cover Tape by John Manville.

3. Approved Equivalent.

2.10.5 Molded Flashing Accessories: Unreinforced TPO membrane pre-molded to suit a variety of flashing details including pipe boots, inside corners, outside corners, T-Joint covers etc. Heat weldable. Colour to match field membrane. Products are supplied by the membrane manufacturer.

2.10.6 Pourable Sealer: Two (2) part polyurethane, two (2) colour for reliable mixing. Acceptable Producsts:

1. Pourable Sealer by Elevate (formerly Firestone).

2. JM TPO Pourable Sealer by John Manville.

3. Approved Equivalent.

2.10.7 Cut Edge Sealant: Synthetic rubber-based, for use where membrane reinforcement is exposed. Acceptable Products.

1. UltraPly TPO Cut Edge Sealant by Elevate (formerly Firestone).

2. JM TPO LVOC Edge Sealant by John Manville.

3. Approved Equivalent.

2.10.8 General Purpose Sealant: UltraPly TPO General Purpose Sealant by Elevate (formerly Firestone) or JM Single Ply LVOC Caulk by John Manville.

2.10.9 Walkway Pads: Non-reinforced nonporous, heavy-duty, slip-resisting, surface-textured walkway pads sourced from membrane roofing system manufacturer. With patterned traffic bearing surface. Acceptable Products:

1. UltraPly TPO Walkway Pads with QuickSeam Yellow Safety Strip by Elevate (formerly Firestone).

2. JM TPO Walkpad by John Manville.

3. Approved Equivalent.

2.11 ROOF ACCESSORIES

2.11.1 Roofing accessories to be manufactured from spun aluminum or copper as required, and complete with removable caps where applicable. All units are to have foamed in place closed cell urethane foam insulation sprayed into the unit at the plant under controlled conditions. Flanges to be primed with rubberized primer.

Type	**Prefabricated Unit**
Retro roof drain	RD-4C-RR-FLAT by Thaler Metal Industries
Retro roof drain	CBD-BR-CR-RR by Altra Metal Specialties
Retro roof drain	FTDC(size required)IDCC-MP by Lexcor

Type	**Prefabricated Unit**
Plumbing stack	SJ-31 (SJ-26) by Thaler Metal Industries
Relief vent	RV-2 by Thaler Metal Industries
B-vent or tall cone	MEF-4A by Thaler Metal Industries
Hot pipe	MEF-3A by Thaler Metal Industries
Roof access ladder (bolt to base)	ARS-500 by Thaler Metal Industries
Miscellaneous support (square base plate)	ARS-550 by Thaler Metal Industries
Gas line supports	Roof Blocks by C-Port
Walkway paver or splash pad	See detail drawing

2.11.2 TPO Coated Metal: Minimum 24-gauge, galvanized sheet steel, laminated to 1 mm non reinforced TPO. Colour as indicated on Drawings.

2.11.3 Expansion Joints: Expansion Joints crossing roof shall be detailed as per manufacturer's standard expansion joint details.

2.11.4 Weathered Membrane Cleaner: Manufacturer’s standard. Used to prepare membrane for heat welding that has been exposed to the elements or to remove general construction dirt.

2.11.5 Seam Plates (supplemental): Steel with barbs and galvalume coating. Corrosion-resistant, complying with FM 4470.

2.11.6 Sheet Metal Flashings and Trim: As per Section 07 62 00

2.11.7 Sealants: As per Section 07 92 00

2.12 FASTENERS AND PLATES

2.12.1 Wood to steel, wood to wood or steel to steel: #14 HD Stainless Steel Drill Point Fastener by Tru-Fast to penetrate substrate by 25 mm (1").

2.12.2 Wood/steel to concrete or concrete block: Tap-Grip Concrete Fastener by Tru-Fast. Truss Head fastener with TRU-Kote PC-3 coating corrosion protection to penetrate substrate by 32 mm (1-1/4”).

2.12.3 Steel/aluminum to aluminum: #14 Heavy Duty Drill Point Roofing Fastener, Truss Head by Tru-Fast with TRU-Kote PC-3 coating corrosion protection c/w EPDM galvanized steel sealing washers to penetrate substrate by 25 mm (1").

2.12.4 Termination bar for membrane: Extruded aluminum, TB-100 aluminum termination bar by Tru-Fast, 0.10" thick x 1" wide x 10' long with 1/4" x 3/8" slotted holes on 203 mm (8") o/c.

2.12.5 Termination bar fastener for wood, steel or aluminum: #14 HD Stainless Steel Drill Point Fastener by Tru-Fast to penetrate substrate by 25 mm (1") c/w EPDM galvanized steel sealing washers.

2.12.6 Termination bar fastener for concrete or masonry: Tap-Grip Concrete Fastener by Tru-Fast. Truss Head fastener with TRU-Kote PC-3 coating corrosion protection to penetrate substrate by 32 mm (1-1/4”) c/w EPDM galvanized steel sealing washers.

2.12.7 Pre-painted metal flashing to steel or wood: #14 HD Stainless Steel Drill Point Fastener by Tru-Fast to penetrate substrate by 25 mm (1") c/w EPDM washer.

2.12.8 All fasteners and plates to meet the requirements of Factory Mutual 4470 Standard for wind uplift and corrosion resistance.

2.13 TPO MEMBRANE FASTENERS AND PLATES (IF REQUIRED):

2.13.1 General: Type and size as required by roof membrane manufacturer for roofing system and warranty to be provided. Use only fasteners and plates furnished by roof membrane manufacturer.

2.13.2 Fasteners:

1. Factory coated steel fasteners and metal plates meeting corrosion resistance provisions in FM 4470, designed for fastening roofing membrane components to substrate, tested by roofing membrane manufacturer for required pull-out strength. Fasteners and pressure distribution plates shall meet FM 4470 and CSA A123.21 for wind uplift requirements.

2. Self-tapping, threaded drill point. Deep buttress threads for high pullout resistance. Extra sharp spade point for quick installation.

3. Head Style: #3 Phillips heavy shank and thread diameters.

4. Length of screws required to penetrate concrete substrate minimum 1” (25 mm).

5. Type and size as recommended by roof membrane manufacturer.

6. Product: Heavy Duty (HD) Fastener by Elevate (formerly Firestone) or Extra High Load Fasteners and Plates or High Load Fasteners and Plates by John Manville

2.13.3 Plate:

1. 3” (75 mm) diameter, 0.028” (0.7 mm) thick, corrosion-resistant steel plate. Plate is secured with fastener.

2. Product: Heavy Duty (HD) or HG Plus Seam Plate by Elevate (formerly Firestone). Extra High Load Fasteners and Plates or High Load Fasteners and Plates by John Manville.

3. Induction Welding Plate: A round specially coated Galvalume® plate with a recessed center and raised flat bonding surface specifically designed for induction welding application. Basis of design: JM TPO RhinoPlate by Johns Manville.

PART 3 - Execution

3.1 EXAMINATION

3.1.1 Examine the Drawings and Specifications to determine the extent of the work involved, together with other necessary data affecting the work, as in no circumstances will any claims against the Owner be allowed resulting from failure to ascertain the extent of such work herein described or implied.

3.1.2 Inspect existing conditions and substrates upon which work of this section is dependent. Report to the Owner in writing any defects or discrepancies. Commencement of work

implies acceptance of existing conditions and assuming full responsibility for the finished condition of the work.

3.1.3 Defective work resulting from application to unsatisfactory conditions will be considered the responsibility of those performing the work of this section.

3.1.4 Inspect completed roof deck and ensure that any defect of level or construction is corrected before proceeding with the Work of this Section.

3.1.5 Inspection – Roof Levels:

1. Before roofing is commenced, inspect and check roof surfaces for level.

2. Undertake a series of spot levels to determine if there is any unevenness in roof decks which may result in pools of water being left on completed roofing in excess of 1/2" (13 mm).

3.1.6 Verify deck is sufficiently rigid to support installers and equipment, and that deflection will not strain or rupture roof components or deform deck.

3.1.7 Verify concrete deck has sufficiently cured to allow adhesion to the substrate surface. Perform moisture test to confirm.

3.1.8 Verify concrete deck is free of chemical sealers or silicone surface treatments, oils, grease, and other substances detrimental to the roofing materials.

3.1.9 Do not apply roofing to surfaces which are dusty, rusty, or covered in loose material, snow, water, ice, or other substance which might impair the bond of roofing materials.

3.1.10 Verify that roof drains have been properly set and installed by the mechanical trade.

3.1.11 Ensure items projecting through roof are solidly set and reglets and nailing strips are in place.

3.1.12 Inspect wood blockings and curbs. Do not install roofing over such items if method of attachment is inadequate to withstand stresses imposed by thermal movement of roofing components.

3.1.13 Ensure plywood and lumber nailer plates and parapets are installed and secured. Verify sleeves, anchors, and other items to be secured to or to pass through roof membrane are installed. Verify that units and curbs are properly secured in place.

3.1.14 Report defects to Consultant and/or Owner. Do not proceed until deficiencies have been corrected.

3.1.15 Commencement of installation means acceptance of existing conditions.

3.2 WORKMANSHIP

3.2.1 Execute roofing work which is not specifically covered by these Specifications in accordance with applicable standards in Canadian Roofing Contractors Association (CRCA) and the National Roofing Contractors Association – Roofing Specification Manual, in accordance with the manufacturer's pre-printed and published specifications, compliance with local fire insurance requirements and/or local building codes, except where specified otherwise.

3.2.2 Procedures for application of materials should be in accordance with manufacturer's recommendations; otherwise the Owner should be notified if any conflict with this Specification arises.

3.2.3 All work shall be carried out in accordance with drawings, specifications and contract documents.

3.2.4 Adhesives or sealants and liquid primers will not be applied until surfaces are dry.

3.2.5 Inspect the underside of roof deck when installing fasteners, where possible, to avoid accidental damage.

3.2.6 While work is in progress, all steps must be taken to safeguard the building from damage due to the elements.

3.2.7 Advise the Owner of adjustments to specified roofing procedures recommended by the Manufacturer or due to site conditions. Written approval is needed to make any adjustments to the specified procedures.

3.3 PREPARATION

3.3.1 Examine all roof decks and site conditions to ensure that they are in satisfactory condition for the commencement of the work of this section.

3.3.2 Examine work of other trades for defects and discrepancies and report them to the owner in writing. Do not proceed with work until surfaces are satisfactory.

3.3.3 The existing roof system shall be removed including all membranes, insulation, flashings and associated debris to expose the decking ensuring proper and adequate adhesion of the new roof assembly.

3.3.4 Once the existing roofing systems are removed, the deck shall be reviewed by the Contractor and Owner. The entire roof area is to be reviewed in order to satisfy warranty requirements of the manufacturer of the new roof system. The Owner is to be notified 48 hours prior to testing.

3.3.5 Prior to the removal of any roof components, all existing openings (drains, vents, air intakes, etc.) shall be covered or plugged to prevent any debris or contaminate from entering the building below. All such coverings are to be removed at the end of each working day and reinstalled prior to the next day's start up.

3.3.6 At areas designated for removal and replacement, the existing roof gravel, projection and perimeter flashings, roof membrane, insulation, vapour retarder, and old appurtenances are to be removed down to the existing structural deck and disposed of to an appropriate site.

3.3.7 All unused and abandoned pitch pockets, vents, curbs, sleepers, projections, etc. are to be removed from the designated areas and disposed of. Obtain verification and authorization from the Owner before removing any suspected unused or abandoned projections. New decking is to be installed as required to close off any openings prior to the installation of the new roofing system.

3.3.8 Ensure roof drains have been installed at proper elevations relative to finished roof surface in order to allow for sufficient drainage of the roof surface.

3.3.9 Disconnect Electrical Services as required.

3.3.10 Disconnect Mechanical Equipment as required.

3.3.11 Ensure that projections and any equipment (electrical conduit, gas lines etc.) are correctly secured to the decking where applicable. If any inadequate securement is found, the Owner is to be informed and work around that area is to be halted until the situation has been rectified.

3.3.12 Any rooftop equipment requiring disconnection shall be the responsibility of the Contractor in consultation with the owner unless otherwise specified in this document.

3.3.13 Prior to application of vapour retarder, examine deck and ensure any defect of level or construction is correct before proceeding with the work.

3.3.14 Inspect wood blocking, cants and the like. Do not install roofing unless such items are adequately installed to withstand stresses imposed by thermal movement of the roof components.

3.3.15 Apply each part of roofing system when surfaces are free of moisture for successful application. Consult with manufacture's printed instructions for successful application.

3.3.16 All details supplied with this scope of work package are acceptable installations. Any deviance from these details must first approved by the Owner prior to installation.

3.4 PROTECTION

3.4.1 Cover walls and adjacent work where materials are hoisted and used.

3.4.2 Use warning signs and barriers. Maintain in good order until completion of work.

3.4.3 Clean off all drips and smears of bituminous materials immediately.

3.4.4 Protect roof from traffic and damage by placing suitable runways over all new membrane work. Comply with precautions deemed necessary by Owner.

3.4.5 At end of each day's work, or when stoppage occurs due to inclement weather, provide protection for completed work and materials out of storage.

3.4.6 Contractor is to take care as not to damage any previously performed work, any closely located buildings and all grounds in the vicinity during roofing operations. Contractor shall protect against dust infiltration and other such occurrences. Garbage chutes are to be located as to minimize their exposure to the building and its occupants. Protect walls by means of tarpaulins where garbage chutes and hoisting equipment is located. Cover dumpsters and bins so that debris does not blow away.

3.4.7 Only equipment that will not adversely affect the deck (damage or alter) is to be used.

3.4.8 Roof access is to be unobstructed. Doorways and fire routes are to be kept clear of any obstacles.

3.4.9 Examine and repair or replace damage caused by work of this contract with materials and finish to match original to Owner's approval.

3.4.10 All non-used materials are to be removed and stored at a location that will prevent any damage (moisture, ultraviolet breakdown, etc.).

3.4.11 Protect all openings and safeguard all vents, stacks, and drains from weather and contamination from debris.

3.4.12 Defective work resulting from application of material on unsatisfactory surface will be considered the responsibility of the Contractor.

3.4.13 Fill all surface voids in the immediate substrate that are greater than 1/4" (6 mm) wide with fill material acceptable insulation to the membrane manufacturer.

3.4.14 Seal, grout, or tape deck joints, where needed, to prevent bitumen seepage into building.

3.5 CARPENTRY

3.5.1 As per Section 06 10 00 – Rough Carpentry

3.6 INSTALLATION

3.6.1 Work shall be in accordance with Canadian Roofing Contractors' Association (CRCA) Roofing Specifications Manual, for Class A roofs, CRCA roofing systems, manufacturer's written instructions, and as specified herein.

3.6.2 Install roofing membrane only when surfaces are clean, dry, smooth, and free of snow or ice. Do not apply roofing membrane during inclement weather or when ambient conditions will not allow proper application. Consult manufacturer for recommended procedures during cold weather. Do not work with sealants and adhesives when material temperature is outside the range of 15°C to 25°C (60°F to 80°F).

3.6.3 Protect adjacent construction, property, vehicles, and persons from damage related to roofing Work. Repair or restore damage caused by roofing Work.

1. Protect from spills and overspray from bitumen, adhesives, sealants, and coatings.

2. Particularly protect metal, glass, plastic, and painted surfaces from bitumen, adhesives, and sealants within the range of wind-borne overspray.

3.6.4 Coordinate with other Work having a direct bearing on Work of this Section.

3.6.5 Coordinate the Work with the installation of associated metal flashings, as the Work of this Section proceeds.

3.6.6 Schedule and execute Work to prevent leaks and excessive traffic on completed roof sections. Care should be exercised to provide protection for the interior of the building and to ensure water does not flow beneath any completed sections of the membrane system.

3.6.7 When positioning membrane sheets, exercise care to locate field splices away from low spots and out of drain sumps. Field splices should be shingled to prevent bucking of water.

3.6.8 When loading materials onto the roof, comply with requirements to prevent overloading and possible disturbance to the building structure.

3.6.9 Proceed with Work so new roofing materials are not subject to construction traffic. When necessary, new roof sections shall be protected and inspected upon completion for possible damage.

1. Provide protection, such as 3/4" (19 mm) thick plywood, for roof areas exposed to traffic during construction. Plywood shall be smooth and free of fasteners and splinters.

3.6.10 New roofing shall be complete and weathertight at the end of the Work Day.

3.6.11 Parapet Sheathing:

1. Mechanically fasten roof board full height to parapet walls and where indicated on Drawings.

2. Adhere roofing membrane to substrate in accordance with manufacturer's recommendations.

3.6.12 Roof Board (sheathing on steel substrate):

1. Provide roof board fully adhered to concrete substrate to meet requirements of CSA A123.21 and as approved by roof system manufacturer's design.

2. Place roof board with long axis of each sheet transverse to steel deck flutes, with end joints staggered and fully supported on flutes. Butt boards together for moderate contact. Adjust spacing so screws are centred on flutes.

3. Hold roof board in place as required by Site conditions until covered by complete roof system.

4. Tape joints in roof board.

5. Temporarily cover roof board not covered by roofing membrane at the end of each Day's Work with polyethylene film.

3.6.13 Vapour Barrier:

1. Apply primer in accordance with manufacturer's instructions for system specified. Allow to dry.

2. Apply perimeter strips under cant strips and blocking and at top of parapets and curbs to provide continuity of vapour barrier of envelope.

3. Extend and seal vapour retarder over perimeter strip and vapour barrier on adjoining walls.

4. Install self-adhesive vapour barrier on to substrate, overlapping side laps minimum 3" (75 mm) and end laps minimum 6" (150 mm). Stagger end laps no less than 12" (305 mm) between sheet runs.

5. Begin Work at bottom of slopes, unroll and align on substrate. Ensure edges are supported.

6. Remove release sheet and adhere membrane, working in sections to avoid wrinkles in membrane.

7. Meet and overlap perimeter strip to air/vapour barrier on adjoining walls.

8. Roll in with a 75 lb (34 kg) roller to fully mate each roll to substrate, including all lap areas.

9. Repair punctures of vapour barrier caused by subsequent Work.

10. Ensure penetrations and edge conditions are sealed to prevent moisture and air drive into the roofing system.

3.6.14 Roof Insulation:

1. Insulation shall be installed immediately after installation of vapour barrier.

2. Inspect vapour barrier and repair any damage. Ensure surface is free of wrinkles, air pockets, fishmouths, or tears.

3. Install insulation with fasteners at rate required by roofing system manufacturer to resist uplift pressure at corners, perimeter, and field of roof.

4. Install roof insulation fully adhered over vapour barrier in accordance with CSA A123.21 and with manufacturer's written recommendations.

5. Bead Spacing:

    1. Field: 12" (300 mm) o.c.

    2. Perimeter: 6" (150 mm) o.c.

    3. Corners: 4" (100 mm) o.c.

6. Install only as much insulation as can be covered with the completed roofing system before the end of the Day's Work or before the onset of inclement weather. At end of each Day's Work, seal exposed edges of insulation. Remove when resuming Work.

7. Lay insulation in courses parallel to roof edges.

8. Use full-size insulation boards wherever possible and minimum half boards at abutting vertical surfaces. Maximum board size 4'-0" x 4'-0" (1.2 m x 1.2 m).

9. Layers:

    1. Lay insulation in two (2) layers minimum.

    2. Base Layer:

        1. Stagger end joints of base layer insulation minimum 50%.

        2. Cut ends of base layer insulation.

    3. End joints of each subsequent layer shall be staggered with adjoining courses minimum 12" (305 mm).

    4. Install subsequent and top layer in soldier pattern.

10. Edges shall be butted to provide moderate contact but not deformed. Accurately cut and fit roof curb insulation as required at vertical surfaces, curbs, and other deck conditions to form continuous thermal barrier. Trim to provide plain butt joints. Do not break or tear insulation boards.

11. Neatly and tightly fit insulation to penetrations, projections, and nailers, with gaps not greater than 1/4” (6 mm). Fill gaps greater than 1/4” (6 mm) with acceptable insulation. Do not leave the roofing membrane unsupported over a space greater than 1/4” (6 mm).

12. Cold Adhesive Attachment: Apply adhesive in accordance with manufacturer’s written instructions. Walk-in individual insulation boards to obtain maximum adhesive contact.

13. Back cut roof insulation boards to a gradual taper 2'-0" (600 mm) diameter around all roof hoppers permitting the hoppers to be depressed approximately 1/2" (13 mm) below general roof level. Premanufactured drain sumps shall be used.

14. Do not allow insulation to become wet or damp during storage or installation.

15. Install insulation in flutes to support insulation where its thickness is reduced at roof drains.

16. Trim insulation to provide plain butt joints at perimeter of insulation, at copings, parapets, curbs, drains, and where insulation meets a vertical surface passing through roof.

3.6.15 Insulation Overlay Board:

1. Install insulation overlay board over insulation and offset joints from underlying insulation layer in soldier pattern.

2. Fully adhere insulation overlay board installed at rate required by roofing system manufacturer or applicable authority, whichever is more stringent.

3. Trim insulation overlay board to provide plain butt joints at perimeter of insulation, at copings, parapets, curbs, drains, and where insulation meets a vertical surface passing through roof.

4. Do not allow insulation overlay board to become wet or damp during storage or installation.

3.6.16 Tapered Insulation:

1. Reduce thickness of insulation at roof drains by 1/2” (13 mm) for a distance of 24” (600 mm) from drain. Slope not to exceed manufacturer’s recommendations.

2. Provide smooth transition from roof surface to drain. Use specified pre-manufactured tapered insulation with facer or suitable bonding surface to achieve slope.

3.6.17 Provide cut-offs by turning back vapour barrier, or otherwise, at the exposed edges of insulation at roof edges and vertical surfaces.

3.6.18 Membrane:

1. Beginning at low point of roof, unroll and place membrane without stretching over substrate and allow to relax at least thirty (30) minutes before attachment or splicing. In colder weather allow for longer relax time.

2. Lay out the membrane pieces so that field and flashing splices are installed to shed water.

3. Membrane shall be fully adhered to meet the wind uplift requirements.

4. Install membrane adhered to substrate with edge securement as specified in this Section.

5. Draw tight and install membrane without folds or wrinkles and without gaps or fishmouths in seams. Bond and test seams and laps in accordance with membrane manufacturer's instructions and details.

6. Lap side joints.

    1. Hand Welding: Minimum 4" (100 mm).

    2. Machine Welding: Minimum 3" (75 mm).

7. Bond membrane to substrate using membrane manufacturer's recommended bonding adhesive, application rate, procedures.

8. Edge and Perimeter Securement:

    1. Secure membrane at all locations where membrane terminates or goes through an angle change greater than 2" in 12" (1:6) using mechanically fastened reinforced perimeter fastening strips, HD plates, or metal edging as recommended by roofing manufacturer on vertical surfaces.

    2. Exceptions: Round pipe penetrations less than 18" (460 mm) in diameter and square penetrations less than 4" (200 mm) square.

    3. Curb walls and expansion joints shall be anchored with appropriate tie-in detail.

    4. Ensure anchorage of membrane is as required by roofing manufacturer.

9. Membrane Hot Air Welding Procedure:

    1. Hot air weld the membrane using an automatic hot air welding machine or hot air hand welder in accordance with the manufacturer's specifications. At splice intersections, roll the seam with a silicone roller immediately after welder has crossed the membrane step-off to ensure a continuous hot air welded seam.

    2. Probe seams once the hot air welds have thoroughly cooled for not less than thirty (30) minutes.

    3. Ensure joints indicate an uninterrupted extrusion of melted material from joint.

    4. Inspect completed membrane and flashings for punctures, tears, and discontinuous weld seams. Apply additional layer of membrane over punctures and tears, extending minimum 2" (50 mm) beyond damaged area in any direction and hot air weld. Re-weld seams where necessary.

    5. Repair seam deficiencies the same Day they are discovered.

10. Inspect completed membrane and flashings for punctures, tears, and discontinuous weld seams. Apply additional layer of membrane over punctures and tears, extending minimum 2" (50 mm) beyond damaged area in any direction and hot air weld. Re-weld seams where necessary.

3.6.19 Termination Bar:

1. Apply a bead of water block seal between the flashing membrane and termination bar.

2. Apply mechanical/base fixation in accordance with manufacturer's written instructions with approved fasteners and termination bar at all transitions from horizontal to vertical plane (e.g., the base of parapets, walls, curbs, peaks, and valleys).

3.6.20 Flashings:

1. Install flashings, including laps, splices, joints, bonding, adhesion, and attachment as required by roofing membrane manufacturer's recommendations and details.

2. Install flashings to vertical substrates, horizontal coping substrates, and other vertical projections from roof including to roof accessories in accordance with reviewed Shop Drawings and manufacturer's written instructions.

3. Complete flashings concurrently with the installation of the roofing membrane and associated TPO-clad metal.

4. Install flashing adhesive onto clean substrate at rate specified by manufacturer. Take care to allow to dry prior to installation of membrane flashing.

5. Coat membrane flashing sheet with adhesive and while adhesive is active, roll membrane onto substrate extending over perimeters as indicated on Drawings.

6. Lap flashing sheet onto membrane a minimum 8" (200 mm) in order to cover fasteners and seal by hot air welding. Provide 3" (75 mm) side lap and seal by hot air welding.

7. Avoid any adhesive at lap area. Clean as necessary. Heat weld laps. Cut and weld interior corners and mitres as required.

8. Properly secure flashings to their support, without sags, blisters, fishmouths, or wrinkles with termination bars as indicated on Drawings and details.

9. Execute Work in accordance with manufacturer's written instructions.

10. Procedures relating to temporary tie-ins shall be in accordance with manufacturer's written instructions.

11. Scuppers: Set in sealant and secure to structures. Flash as recommended by manufacturer.

12. Roofing Expansion Joints: Install insulated, flexible, continuous membrane expansion and movement joints, including curb-to-wall and curb-to-curb expansion joints, and where indicated on Drawings and as recommended by roofing manufacturer in accordance with manufacturer's written instructions.

13. Flashing at Walls, Curbs, and Other Vertical and Sloped Surfaces:

    1. Install weathertight flashing at all walls, curbs, parapets, skylights, and other vertical and sloped surfaces that the roofing membrane abuts to. Extend flashing at least 8” (200 mm) high above membrane surface.

    2. Use the longest practical flashing pieces.

    3. Evaluate the substrate and overlay and adjust installation procedure in accordance with membrane manufacturer’s recommendations.

    4. Complete the splice between flashing and the main roof sheet with specified splice adhesive before adhering flashing to the vertical surface.

    5. Provide termination directly to the vertical substrate as indicated on Drawings.

14. Roof Drains:

    1. Install roof drains centred in depressed area of roof sump and in accordance with manufacturer’s written instructions.

    2. Position membrane, then cut a hole for roof drain to allow 1/2” to 3/4” (13 mm to 19 mm) of membrane to extend inside the clamping ring past drain bolts.

    3. Make round holes in membrane to align with clamping bolts. Do not cut membrane back to bolt holes.

    4. Apply sealant on top of drain bowl where clamping ring seats below the membrane.

    5. Install roof drain clamping ring and clamping bolts. Tighten clamping bolts to achieve constant compression.

15. Flashing at Penetrations:

    1. Install prefabricated moulded flashing accessories in accordance with manufacturer’s written instructions.

    2. Flash penetrations passing through the membrane. Make flashing seals directly to the penetration.

    3. Pipes, Round Supports, and Similar Items: Flash with specified pre-molded pipe flashings wherever practical. Otherwise, use specified self-curing elastomeric flashing.

    4. Pipe Clusters and Unusual Shaped Penetrations: Provide penetration pocket at least 2” (50 mm) deep, with at least 1” (25 mm) clearance from penetration, sloped to shed water.

    5. Structural Steel Tubing: If corner radii are greater than 1/4” (6 mm) and longest side of tube does not exceed 12” (300 mm), flash as for pipes. Otherwise, provide a standard curb with flashing.

6. Flexible and Moving Penetrations: Provide weathertight gooseneck set in sealant and secured to deck, flashed as recommended by manufacturer.

16. Hot Pipes:

1. Protect TPO components from direct contact with steam or heat sources that exceed in-service temperature of 71°C (160°F).

2. Roof penetrations exceeding 71°C (160°F) shall be flashed to an in intermediate or separator sleeve in accordance with roofing membrane manufacturer's recommendations.

3.6.21 Walkway Pads (if applicable):

1. Ensure roofing membrane surface is clean, completely dry, and free of debris.

2. Place with textured side up.

3. Install in maximum 10'-0" (3 m) long sections. Spacing each pad at minimum 1" (25 mm) and maximum 3" (75 mm) from each other to allow for drainage.

4. Fully heat weld the perimeter of each walkway pad to the roofing membrane, leaving one (1) or two (2) in the weld at the low side of the pad to allow for the escape of inadvertent moisture.

5. If installation of walkway pads over field fabricated splices or within 6" (150 mm) of a splice edge cannot be avoided, adhere another layer of flashing over the splice and extending beyond walkway pad a minimum of 6" (150 mm) on either side.

6. Install at all access points (e.g., ladders, hatches, doorways, etc.), around rooftop equipment, and where indicated on Drawings.

3.7 FIELD QUALITY CONTROL

3.7.1 Provide final inspection of the roofing system by a technical representative employed by the roofing system manufacturer, specifically to inspect installation for warranty purposes.

3.7.2 Arrange Site meeting with roofing inspector three (3) weeks prior to commencement of Work on Site to review Work and procedures specified in this Section.

3.7.3 Cooperate with the inspector and afford all facilities necessary to permit full inspection of the Work of this Section and testing of materials prior to their use at no additional cost to the Owner.

3.7.4 Perform all corrections necessary.

3.8 CLEAN-UP

3.8.1 Clean up and remove from job site on a daily basis, all rubbish and surplus materials resulting from this work.

END OF SECTION

This page left blank intentionally

PART 1 - General

1.1 RELATED SECTIONS

1.1.1 Section 01 11 00 – Summary of Work

1.1.2 Section 07 52 00 – Modified Bituminous Membrane Roofing

1.1.3 Section 07 92 00 – Joint Sealants

1.2 REFERENCES

1.2.1 All codes, standard specifications and by-laws referred to in this section shall be current editions including all revisions, addenda and supplements.

1.2.2 ASTM A653/A653M – Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

1.2.3 ASTM D4586 – Asphalt Roof Cement, Asbestos Free

1.2.4 CAN/CGSB 93-GP-3M – Sheet, Steel, Galvanized Prefinished

1.2.5 CSSBI Bulletin No. 9 – Care and Maintenance of Pre-finished Sheet Steel Building Products

1.2.6 CRCA – Canadian Roofing Reference Manual

1.2.7 NRCA (National Roofing Contractors Association) – Roofing and Waterproofing Manual

1.2.8 SMACNA – Architectural Sheet Metal Manual

1.3 QUALITY ASSURANCE

1.3.1 Perform work in accordance with CRCA, SMACNA, and NRCA standard details and requirements.

1.3.2 Compatibility between components of the roofing system and wall system are essential. Provide written declaration to the Owner stating that materials and components, as assembled in system will meet this requirement.

1.3.3 Contractor must be pre-approved and licensed by the membrane manufacturer, Owner and Owner prior to tender, and must be a member in good standing with the Ontario Roofing Contractors Association (OIRCA) and have a minimum ten (10) years relevant experience.

1.4 DELIVERY, STORAGE, AND HANDLING

1.4.1 Stack preformed and pre-finished material to prevent twisting, bending, or abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

1.4.2 Prevent contact with materials which may cause discolouration or staining.

1.4.3 Do not store metals in direct contact with the earth, road surface, or roof deck. Place suitable supports under the metal upon delivery to protect it from scratching or puncturing membrane, membrane flashing or absorbing moisture from the surrounding terrain or deck.

1.4.4 Store all materials in waterproof covered trailers.

1.4.5 Handle and store products in a manner to prevent damage and deterioration.

1.4.6 Remove and replace damaged products at own expense and to the satisfaction of the Owner.

1.5 WARRANTY

1.5.1 The Contractor shall provide the Owner with a two (2) year material and workmanship warranty on Contractor letterhead.

1.5.2 Any repairs required shall be carried out in accordance with the recommendations of the Owner, consistent with the requirements of this Section, at no cost to the Owner.

PART 2 - Products

2.1 MATERIALS

2.1.1 Compatibility between materials is essential. Use only materials that are known to be compatible when incorporated in a completed assembly.

2.1.2 Pre-finished Metal Flashing: 24-gauge (0.701 mm or 0.0276") steel with Z275 (G90) zinc coating conforms to the requirements of ASTM A653A/A653M. Surface with Dofasco Perspectra Series or Valspar WeatherX factory-baked finish. Colour to be selected by Owner from manufacturer's standard colour range.

2.1.3 Cleats and Hook Strips Not Otherwise Specified: Two gauges heavier of matching materials of flashing being employed. Minimum 22-gauge (0.853 mm or 0.0336").

2.2 JOINTING

2.2.1 Linear mating of Cap flashings and Parapet flashings shall be with an "S" lock joint.

2.2.2 Corner mating shall be completed with a standing seam.

2.3 ACCESSORIES

2.3.1 Underlayment: ASTM D2178; No. 15 Type III standard ply sheet asphalt saturated roofing felt or 6 mil (0.15 mm) polyethylene.

2.3.2 Slip Sheet: Smooth unsaturated quality rosin sized paper weighing not less than 0.3 Kg/m^2 (6 lbs per 100 ft^2) unless otherwise shown to CSA A123.3M.

2.3.3 Joint Filler: Extruded polyethylene, closed cell, Shore A hardness 20, tensile strength 140 to 210 kPa (20 to 30 psi), 25% to 30% wider than joint to be caulked.

2.3.4 Touch-up Paint: as recommended by pre-finished material manufacturer.

2.3.5 Protective Backing Paint: alkali resistant bituminous paint

2.3.6 Sealant: as per Section 07 92 00

2.4 FASTENERS

2.4.1 Use galvanized, copper, aluminium or stainless steel nails or screws as most compatible with materials being employed. Use fasteners as most generally suitable to.

2.4.2 Nails:

1. Minimum diameter for copper nails: 3 mm (0.109”)
2. Minimum diameter for aluminum nails 3 mm (0.105”)
3. Minimum diameter for stainless steel nails: 2 mm (0.095”) and annular threaded
4. Length to provide not less than 22 mm (7/8”) penetration into anchorage.

2.4.3 Exposed Fasteners: #12 Flat-top under-cut hex heads 410 stainless steel drilling and self-tapping fastener with EPDM sealing washer and Oxyseal II coating by Atlas Bolt & Screw Company. Consult manufacturer for screw type and sizing for materials being secured. Provide caps for screw heads to match colour of flashing as specified or shown.

2.4.4 Masonry Fasteners: Tapcon fastener with Climaseal corrosion coating by Buildex/Red Head or approved equivalent, 1/4“ diameter and of sufficient length to provide a minimum of 38 mm penetration into substrate.

2.4.5 Wedges: Rolled plumber sheet lead. Secure metal flashings on the inside and should be secured with No.10 galvanized screws through neoprene washers at 760 mm (30") on center.

2.4.6 Masonry Anchors: Rawl lead lags for screws as recommended by manufacturer.

2.5 FABRICATION

2.5.1 Fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, geometry, metal thickness, and other characteristics of item indicated.

2.5.2 Fabricate all possible work in shop in 2.4 m (8') lengths by brake forming, bench cutting, drilling and shaping. On high vertical sections install metal in 1.2 m (4') section as specified and detailed. Profiled metal to be cold rolled.

2.5.3 On coping or flashing with a horizontal dimension of 406 mm (16”) or greater, fabricate metal flashings in maximum 1.2 m (4’) sections.

2.5.4 On coping or flashing with a horizontal dimension of 508 mm (20”) or greater, use 25 mm (1”) lock folded standing seam joints.

2.5.5 Form bends with straight sharp lines, angles and corners into true planes, free from twists, buckles, dents and other visual distortions.

2.5.6 Double-back exposed metal edges at least 13 mm (0.5”). Raw edges will not be permitted.

2.5.7 Supply all accessories required for installation of sheet metal work of this Section. Fabricate accessories of same materials to which they will be used.

PART 3 - Execution

3.1 EXAMINATION

3.1.1 Examine the Drawings and Specifications to determine the extent of the work involved, together with other necessary data affecting the work, as in no circumstances will any claims against the Owner be allowed resulting from failure to ascertain the extent of such work herein described or implied.

3.2 PREPARATION

3.2.1 Review roof levels and advise Owner of any deviation from specified tolerances.

3.2.2 Prior to application of flashings, examine membrane flashings and ensure any defect of level or construction is corrected before proceeding with the work.

3.3 PROTECTION

3.3.1 Protect walls where hoisting is required.

3.3.2 Protect roofs from damage due to traffic and materials handling until completion of the building.

3.4 INSTALLATION

3.4.1 Install sheet metal flashings at copings, walls, joints, roof openings and other components required to protect the membrane flashings as shown on the drawings, or otherwise required.

3.4.2 Install continuous concealed hook strips at all exterior faces. Install cleats as required to protect membrane roofs and flashings from damage at lock joints and as required to permanently hold flashing in place. Secure cleats at 152 mm (6”) on center in V-pattern, keeping lower fastener within 32 mm (1.25”) of the drip edge.

3.4.3 Sheet metal work shall be installed to cover the entire area it protects and shall be watertight under all service and weather conditions. Install in a uniform manner, level, true to line, free of dents, warping and distortion.

3.4.4 Isolate and protect dissimilar metals from contact with each other by applying specified isolation material to contact surfaces.

3.4.5 Protect surfaces of sheet metal that comes into contact with another kind of metal, treated wood, masonry, or concrete with a heavy coat of bituminous paint.

3.4.6 Install sheet metal with concealed fasteners at lock joints. Exposed fastening will be permitted only with the approval of the Owner. Space all fasteners evenly in an approved manner. Use lead plugs and screws where fasteners are exposed, otherwise use concrete drive fasteners where metal flashings are installed over concrete or masonry.

3.4.7 Install underlay under sheet metal, installed directly over wood or masonry surfaces. Overlap joints 51 mm (2") and turn up 76 mm (3") at edges where horizontal surfaces intersect vertical planes.

3.4.8 Join sheet metal by “S” lock seams, to permit thermal movement. Fill all joints with caulking as flashing is being installed. Clean off all excessive material visible subsequent to installation. Space joints evenly where exposed. Form inside and outside corners by means of raised seams. Lock seams and caulk all overlaps to ensure water tightness. Do not use pop rivets.

3.4.9 Slope all metal to interior to maintain minimum 8% slope. Do not form open joints or pockets that fail to drain water.

3.4.10 Caulk all open sheet metal joints. Solder corners and other locations as required for a permanent waterproof connection.

3.4.11 Provide new reglets sized minimum 10 mm (3/8") wide, 25 mm (1") deep.

3.4.12 Clean reglets free of contaminates and dust.

3.4.13 Wedge flashings into reglet joints with lead wedges at 229 mm (9") o.c. Set minimum 6 mm (1/4") from masonry surface.

3.4.14 At reglets wider than 10 mm (3/8") and deeper than 19 mm (3/4") provide polyethylene rod, 25% wider than joint width. Caulk all reglets to provide a continuous waterproof seal. Use colour to match materials. Conform to manufacturer's latest printed recommendations for use of products being employed.

3.4.15 Carry flashings out onto the roof minimum 76 mm (3").

3.4.16 Prepare a mock up installations of the metal flashing details for approval by roof inspector prior to the installation of the metal flashings.

3.5 FINISH

3.5.1 At project's conclusion, leave surface and adjacent work areas free of damage and clean of debris. Finished surfaces of formed metal flashings shall be free of oil canning, dents and be perfectly colour matched. Changes in colour between sheets and dented or oil canned surfaces that detract from the visual appearance of finished product will be rejected. Remove and replace damaged, defaced or defective work.

3.5.2 Paint all exposed metal due to cutting

3.5.3 After erection touch-up finish surfaces damaged during handling and erection in conformance with manufacturer's recommendations. Refinish shop applied finishes as approved by Owner.

3.5.4 Remove deposits or protections and wash metals left unpainted and exposed to view as specified by metal manufacturer.

3.6 CLEAN-UP

3.6.1 Daily as the work proceeds and on completion, remove all surplus materials and debris resulting from the foregoing work.

3.6.2 Remove all stains, caulking or other adhesive from all affected surfaces.

END OF SECTION

[Delete this page if total page count of Scope is even]
This page left blank intentionally

PART 1 - General

1.1 SECTION INCLUDES

1.1.1 Preparing substrate surfaces.

1.1.2 Sealant and joint backing.

1.2 RELATED SECTIONS

1.2.1 Section 01 11 00 – Summary of Work

1.3 REFERENCES

1.3.1 All codes, standard specifications and by-laws referred to in this section shall be current editions including all revisions, addenda and supplements.

1.3.2 ASTM C920 – Standard Specification for Elastomeric Joint Sealants

1.3.3 ASTM C1193 – Standard Guide for Use of Joint Sealants

1.3.4 ASTM C1311 – Standard Specification for Solvent Release Sealants

1.3.5 ASTM C1481 – Standard Guide for Use of Joint Sealants with Exterior Insulation and Finish Systems (EIFS)

1.3.6 CAN/CGSB-19.13 – Sealing Compound, One-component, Elastomeric, Chemical Curing

1.3.7 CGSB 19-GP-5M – Sealing Compound, One Component, Acrylic Base, Solvent Curing

1.3.8 CGSB 19-GP-14M – Sealing Compound, One Component, Butyl-Polyisobutylene Polymer Base, Solvent Curing

1.3.9 CAN/CGSB-19.17 – One-component Acrylic Emulsion Base Sealing Compound

1.3.10 CAN/CGSB-19.24 – Multi-component, Chemical Curing Sealing Compound

1.3.11 SWRI (Sealant, Waterproofing and Restoration Institute) – Sealant and Caulking Guide Specification.

1.3.12 Sealants: The Professionals' Guide, Sealant, Waterproofing and Restoration Institute.

1.4 SUBMITTALS

1.4.1 Section 01 33 00 – Submittal Procedures

1.4.2 Manufacturer's Installation Instructions: Indicate special procedures, surface preparation, perimeter conditions requiring special attention, and field quality control testing.

1.5 QUALITY ASSURANCE

1.5.1 Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

1.5.2 Perform sealant application work in accordance with ASTM C1193.

1.5.3 Maintain one copy of document on site.

1.5.4 Inspection of work will be carried out by the Owners designated personnel.

1.5.5 A pre-construction meeting shall be conducted at the project site to coordinate work and sequencing of work. The meeting shall include Owner and Contractor.

1.5.6 The Contractor must provide the Owner with one (1) week notice prior to commencement of work.

1.5.7 Prior to mobilizing on site, prepare and install sealant samples for adhesion testing, a minimum of two (2) samples for each substrate combination, according to the manufacturers written guidelines. Test sealant in contact with samples of materials to be caulked to ensure that proper adhesion will be obtained and no staining of the material will result. Testing to be completed prior to mobilization on site. Do not proceed with work until samples have been approved.

1.5.8 Adhesion tests on the new sealant will be pre-formed at random locations at the discretion of the Owner's representative. Any work that is found to be sub-standard shall be removed and replaced at no cost to the Owner. The contractor shall assist with the sealant adhesion tests as directed.

1.5.9 Execute the work of this Section by Subcontractors approved by manufacturers of materials incorporated in the work; who has equipment, adequate for the project, and skilled tradesmen to perform it expeditiously; and is known to have been responsible for satisfactory installations similar to that specified during a period of at least the immediate past five years.

1.5.10 Remove sealant and re-caulk disapproved joints.

1.5.11 Approved joints will establish minimum acceptable quality of workmanship and will serve as the standard by which subsequent work will be compared for acceptance.

1.6 QUALIFICATIONS

1.6.1 Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum 20 years documented experience.

1.6.2 Applicator: Company specializing in performing the work of this section with minimum 5 years documented experience and approved by manufacturer.

1.7 MOCK-UP

1.7.1 Construct mock-up with specified sealant types and with other components noted.

1.7.2 Construct mock-up at test area to show location, size, shape and depth of joints complete with back-up material, primer, caulking and sealant.

1.7.3 Locate where directed.

1.7.4 Mock-up may be part of finished work.

1.7.5 Allow 48 hours for inspection of mock-up by Owner before proceeding with sealant work.

1.8 DELIVERY, STORAGE, AND HANDLING

1.8.1 Deliver and store materials in original wrappings and containers with manufacturer's seals and labels, intact.

1.8.2 Convey and store Products according to manufacturer's instructions.

1.8.3 Where possible, do not store Products on roof. Only quantity of Product that will be used in one working day may be stored on roof. Insure that products loaded on roof are distributed evenly on the roof surface to avoid overloading roof at one point.

1.8.4 Cover and store Products on elevated platforms, protected from weather, freezing, water, construction activities. Protect from contact with ground or floor.

1.8.5 Remove and replace damaged, wet or broken Products.

1.8.6 Store products (primers, solvents, etc.) away from open flam or ignition source.

1.8.7 See Section 01 61 00 Common Product Requirements

1.9 COORDINATION

1.9.1 Section 01 33 00: Coordinate work.

1.9.2 Coordinate the work with all sections referencing this section.

1.10 ENVIRONMENTAL AND SAFETY REQUIREMENTS

1.10.1 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 material safety data sheets acceptable to local Labour regulations.

1.10.2 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

1.11 WASTE MANAGEMENT AND DISPOSAL

1.11.1 Place materials defined as hazardous or toxic waste in designated containers.

1.11.2 Ensure emptied containers are sealed and stored safely for disposal away from children.

1.11.3 Dispose of surplus chemical and finishing materials in accordance with federal regulations.

1.11.4 Fold up metal banding, flatten, and place in designated area for recycling.

1.11.5 Use trigger operated spray nozzles for water hoses.

1.11.6 Return solvent and oil soaked rags for contaminant recovery and laundering or for proper disposal.

1.11.7 Use the least toxic sealants, adhesives, sealers, and finishes necessary to comply with the requirements of this section.

1.11.8 Close and seal tightly all partly used sealant containers and store protected in well ventilated fire-safe area at moderate temperature.

1.11.9 Place used hazardous sealant tubes and other containers in areas designated for hazardous materials.

1.12 WARRANTY

1.12.1 Installers Warranty:

1. Original statement on installer's letterhead in which installer agrees to repair or replace joint sealants that demonstrate deterioration or failure within warranty period specified.

    1. Warranty Period: Two (2) years from date of substantial completion.

2. Include coverage for installed sealants and accessories which fail to achieve air tight seal, water tight seal, and exhibit loss of adhesion or cohesion, or do not cure.

1.12.2 Provide manufacturer's twenty (20) year material warranty for installed silicone sealant.

1.12.3 All products to be tested and validated by the Sealant Weatherproofing Restoration Institute (SWRI).

PART 2 - Products

2.1 COMPATIBILITY

2.1.1 All materials in a sealant system shall be compatible with each other, with the substrate and any coating, roofing or waterproofing to be installed. The sealants used with the elastomeric coating, roofing or waterproofing systems must be approved by the respective manufacturer.

2.1.2 Compatibility between components of roofing system is essential. All roofing components including bituminous adhesives, insulation, felts, flashings, accessories and surface coatings which are to be incorporated into the system must be compatible with all specified components.

2.1.3 At the request of the Owner, provide written declaration from the Manufacturer that components/materials to be installed as part of this section are compatible with their substrates, and will not negatively affect performance or void any warranties.

2.2 SEALANT MATERIALS

2.2.1 Sealant compounds must:

1. Meet or exceed all applicable governmental and industrial safety and performance standards.

2. Be manufactured and transported in such a manner that all steps of the process, including the disposal of waste products arising therefrom, will meet the requirements of all applicable governmental acts, by laws and regulations.

3. Be accompanied by detailed instructions for proper application so as to minimize health concerns and maximize performance, and information describing proper disposal methods.

4. Sealants shall be compatible with and adhere to the substrates to which they are applied and shall comply with the requirements of ASTM C 1193.

2.2.2 Sealant that emits strong odours, contains toxic chemicals, or is not certified as mould resistant shall not be used in or near air handling units.

2.2.3 Joint widths shall comply with the requirements of ASTM C 1472.

2.3 SEALANT MATERIAL DESIGNATIONS

2.3.1 Bituminous Based (Type B), single component, asphalt compound, elongation capability of 0 to 2 percent of joint width.

2.3.2 Acrylic Emulsion Latex (Type C), ASTM C834, single component;

1. Tremflex 834 manufactured by Tremco.

2.3.3 Acrylic Sealant (Type D), ASTM C920, single component, solvent curing, non-staining, non-bleeding, non-sagging:

1. Colour: to be selected and approved by the Owner.
2. Elongation Capability 7.5 to 12 percent
3. Mono 555 manufactured by Tremco.

2.3.4 Butyl Sealant (Type E): ASTM C920, single component, solvent release, non-skinning, non-sagging, black colour:

1. Elongation Capability 7 to 10 percent
2. Butyl manufactured by Tremco.

2.3.5 Acoustic Sealant (Type E): ASTM C920, Acoustic grade, single component, solvent release, non-skinning, non-sagging, Grey colour:

1. Elongation Capability 7 to 10 percent
2. Acoustical manufactured by Tremco.

2.3.6 Polysulfide Sealant (Type F), ASTM C920, two component, chemical curing, non-staining, non-bleeding, capable of continuous water immersion:

1. Colour: to be selected and approved by the Owner.
2. Elongation Capability 25 percent

2.3.7 Polyurethane Sealant, single component (Type G), CAN/CGSB 19.13, ASTM C-920, Type S, Grade NS, Class 25 chemical curing, non-staining, non-bleeding, non-sagging:

1. Colour: to be selected and approved by the Owner.
2. Elongation Capability: 25 percent
3. Max. joint width: 12 to 36 mm
4. Application Temperature: 4 to 49 degrees C
5. Acceptable Products:

1. Vulkem 116 by Tremco
2. Sikaflex-1A by Sika
3. Masterseal NP1 by BASF
4. Vulkem 45 SSL by Tremco

2.3.8 Polyurethane Sealant, multi component, chemical curing, (Type H), CAN/CGSB 19.24, non-staining, non-bleeding, non-sagging:

1. Colour: to be selected and approved by the Owner.
2. Elongation Capability: 25 percent
3. Max. joint width: 50 mm
4. Application Temperature: 4 to 49 degrees C
5. Acceptable Products:
    1. Dymeric 240FC manufactured by Tremco
    2. THC 900/901 manufactured by Tremco.

2.3.9 Silicone Sealant, single component, solvent curing, (Type I): CAN/CGSB 19.13; non-sagging, non-staining, non-bleeding:

1. Colour: to be selected and approved by the Owner.
2. Elongation Capability: 40 percent
3. Max. joint width: 30 mm
4. Application Temperature: -29 to 71 degrees C
5. Acceptable Products:
    1. Proglaze manufactured by Tremco

2.3.10 Silicone Sealant, single component, neutral curing (Type J): CAN/CGSB 19.13, fungus resistant, non-sagging, non-staining, non-bleeding:

1. Colour: to be selected and approved by the Owner.
2. Elongation Capability: 40 percent
3. Max. joint width: 30 mm
4. Application Temperature: -29 to 71 degrees C
5. Preferred Sealants for Low Dirt Pick-up Applications
    1. 756 SMS Silicone Building Sealant, by Dow Corning Corporation
6. Acceptable Products – Exterior Sealant:
    1. Spectrum 1 by Tremco,

2. Spectrem 2 by Tremco

3. Tremsil 400 by Tremco

4. DC 795 Silicone Building Sealant, by Dow Corning Corporation

5. DC 790 Silicone Building Sealant, by Dow Corning Corporation

6. DC 791 Silicone Weatherproofing Sealant by Dow Corning Corporation

7. DC 756 SMS Silicone Building Sealant

8. DC Contractors Weatheproofing Sealant (CWS) by Dow Corning Corporation

9. Contractors Concrete Sealant (CCS), by Dow Corning Corporation

7. Acceptable Products - Interior Sealant:

1. Contractors Weatherproofing Sealant (CWS) by Dow Corning Corporation.

2. Tremsil 400 by Tremco

3. Dymonic 100 by Tremco (paintable)

2.3.11 Silicone Sealant, single component, acidic curing, fungus resistant, (Type K): CAN/CGSB 19.13, non-sagging, non-staining, non-bleeding:

1. Colour: to be selected and approved by the Owner.

2. Elongation Capability: 40 percent

3. Max. joint width: 30 mm

4. Application Temperature: -29 to 71 degrees C

5. Acceptable Products:

1. DC 786 by Dow Corning Corporation

2. DC Tub Tile and Ceramic by Dow Corning Corporation

3. Tremsil 200 by Tremco

2.3.12 High Temperature Silicone (Type L), single component:

1. TremPro 644 manufactured by Tremco

2. Hi-Temp Sealant Red manufactured by Dow Corning

3. Sikasil-GP manufactured by Sika

2.3.13 Polyether, single component (Type M)

1. ASTM C-920, Type S, Grade NS, Class 50

2. Acceptable Products:

1. Sonolastic 150 with VLM Technology by Sonneborn, a Div. of BASF Chemical

2. M-1 Structural Adhesive / Sealant by ChemLink

3. DuraLink by ChemLink

4. NovaLink by ChemLink

2.3.14 Pre-formed Silicone Seal: Preformed, ultra-low modulus silicone extrusion for bonding to substrates with silicone sealant:

1. Dow Corning 123 Silicone Seal, as manufactured by Dow Corning Corporation or approved equivalent.

2. Tremco Simple Seal

2.3.15 Elastomeric silicone sealant, single component, neutral-cure, Low Dirt Pick-up, Non-Staining, Medium-modulus, pre-pigmented; Compliance: Sealant shall meet or exceed requirements of ASTM C920, Type S, Grade NS, Class 50, Use NT, G, M, A, and O and ASTM C 1248.

1. Dow Corning 756 SMS Building Sealant, as manufactured by Dow Corning Corporation.

2. Tremco Spectrem 3, as manufactured by Tremco

2.3.16 Air/Weatherbarrier Sealant - Caulking to polyethylene face membranes:

1. Dow Corning 758 Weather barrier Sealant or Dow Corning 756 SMS Silicone Building Sealant

2. Spectrem 1 by Tremco

2.3.17 A preformed, pre-compressed polyurethane foam sealant impregnated with an acrylic - based flame resistant and weatherproofing resin.

1. The product is non-drying, non-shrinking, and self-expanding. The seal material is typically open cell, and supplied in stick or roll form.

2. Material to be supplied in roll format. Rolls shall be used when joint designs are less than 3” in width (from substrate to substrate). Stick form material shall be used when joint design exceeds 3”. Both material designs have a pressure sensitive adhesive on one flank of the joint filling material.

3. Material shall be Illmod 600, manufactured by Tremco.

2.4 ACCESSORIES

2.4.1 Primer:

1. Non-corrosive and non-staining type, compatible with joint forming materials and sealant. Primer as recommended by sealant manufacturer.

2.4.2 Joint Cleaner: Non corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.

1. Isopropyl Alcohol (recommended)

2. Do not use: Xylol, Xylene, Toluene, Butanone

3. All substrate materials shall be cleaned with compatible cleaners.

2.4.3 Sealant Joint Backing (Backer Rods):

1. ASTM C1330; round, closed cell polyethylene foam rod; oversized 25 to 50 percent larger than joint width;

2. Joint backing shall be used at butt-joints to control depth of joint to the recommended thickness of sealant and to prevent three-sided adhesion without affecting the overall performance of the in-situ sealant.

3. Backer rods shall be made of material suitable for this application and shall be compatible with the cleaners, primers, and sealants.

4. Backer rods shall be easily compressible and 25 to 50% larger in diameter than the joint in which they will be used, to ensure that they remain under continuous compression once installed into the joint. The installation shall be carried out without causing damage to the substrates.

5. Acceptable Products:

    1. Good: ITP Standard Backer Rod manufactured by Industrial Thermo Polymers Limited.

    2. Better: ITP Soft Type Backer Rod manufactured by Industrial Thermo Polymers Limited.

2.4.4 Bond Breaker:

1. Where the joint prevents the use of a conventional backer rod, a bond-breaker tape shall be installed to prevent three-sided adhesion. Bond-breaker tape shall have one surface that is pressure sensitive and one surface that does not bond to the sealant.

2. Polyethylene bond breaker tape, as recommended by sealant manufacturer to suit application.

2.4.5 Void Filler:

1. Glass fiber insulation with a normal density of 14 kg/m3. Sized for 25% compression.

PART 3 - Execution

3.1 EXAMINATION

3.1.1 Before commencing work, verify that joint configuration and surfaces have been provided as specified under the work of other sections to meet intent of sealant specification, that joint conditions will not adversely affect execution, performance, or quality of completed work, and that they can be put into acceptable condition by means of preparation

specified in this section. Verify site conditions together with manufacturer's representative of the sealant to be applied.

3.1.2 Inspect existing conditions and substrates upon which work of this section is dependent. Report to the Owner in writing any defects or discrepancies. Commencement of work implies acceptance of existing conditions and assuming full responsibility for the finished condition of the work.

3.1.3 Ascertain that sealers applied to sealant substrates are compatible with the sealant used and that full bond between sealant and substrate is attained. Request samples of the sealed or coated substrate from their fabricators for testing of compatibility and bond if necessary.

3.1.4 Inspect sealant configuration for width and depth. Depth of joint should be 1/2 joint width with a minimum depth of 6 mm (1/4”) and a maximum depth of 13 mm (1/2”) unless specified otherwise. For fillet joints, a minimum of 6 mm (1/4”) adhesion between sealant and substrate must be achieved on both sides of the joint unless specified otherwise.

3.1.5 Defective work resulting from application to unsatisfactory joint conditions will be considered the responsibility of those performing the work of this section.

3.2 PROTECTION

3.2.1 Protect existing facades from staining or contamination.

3.2.2 Protect public from falling debris during installation.

3.2.3 At end of each day's work or when stoppage occurs due to inclement weather, provide protection for completed work and materials out of storage. At no time shall unsealed joints be left open. If protection is required, then the entire drop/bay shall be adequately protected.

3.3 SURFACE PREPARATION

3.3.1 Prepare surfaces in accordance with manufacturer's directions.

3.3.2 Before any sealant repairs are made, the type of existing sealant shall be determined. If uncertain as to type, a sealant manufacturer technical representative shall be contacted to confirm type. Only sealant compatible with the existing shall be installed as part of repairs. Polyurethane based sealants are not to be applied over existing silicone sealants.

3.3.3 Where existing, remove sealant completely. In no case shall new sealant be applied over old. In addition:

1. Remove existing sealants, dust, oil, grease, oxidation, mill scale, coatings and all other loose material by cutting, brushing, scrubbing, scraping and/or grinding. In no case, however, shall components be damaged during surface preparation.

2. Clean substrates with the recommended solvent cleaner. Apply solvent with a clean cloth, pad or soft paper towel. The applicator cloth or towel shall not leave fiber residue on the substrate surface. The surface should be wiped clean and dried with a second clean cloth to ensure removal of contaminants. If substrate surfaces is still not clean, repeat procedures as needed. Change cloths frequently to prevent depositing contaminants from the cloth onto the substrate surface.

3. Use method of surface preparation suitable for substrate, as recommended by sealant manufacturer and that does not damage existing finishes.

3.3.4 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.

3.3.5 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.

3.3.6 Ensure joint surfaces are dry and frost free.

3.3.7 At crack locations to be sealed at the sill locations, use a concrete router to create a minimum 10 x 15 mm (3/8” x 5/8”) deep groove. Saw-cutting is not an acceptable alternative.

3.3.8 Remove loose particles present or resulting from routing by sweeping particles out with a dry brush, blowing out joints with oil free compressed air or by vacuuming joints prior to solvent cleaning.

3.3.9 Ensure drain holes in window frames are unobstructed and remove blocked drain holes.

3.4 PRIMING

3.4.1 Where necessary to prevent staining or for neat appearance, mask adjacent surfaces prior to priming and caulking.

3.4.2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

3.4.3 Use only the primer approved by the sealant manufacturer for the particular installation, applying in strict accordance with the manufacturers printed recommendations.

3.4.4 Always pour primers onto the rag or brush, do not dip the rag or brush into the container.

3.4.5 Prime only as much area that can be packed and caulked in a single day.

3.4.6 Do not apply excess primer, and apply primer only to areas which it will be contacted by sealant.

3.5 BACKUP MATERIAL

3.5.1 Apply bond breaker tape where the installation of backer rod is not possible, three point adhesion needs to be eliminated or the throat to width ratio needs to be created as per manufacturers recommendations.

3.5.2 When using backing material comprised of tubular or rod stock, avoid lengthwise stretching of the material. Do not twist or braid backer material.

3.5.3 Provide a stiff blunt-surfaced wood or plastic installation tool, having shoulders designed to ride on the finished surface and a protrusion of the required dimensions to assure a uniform depth of backup material below the sealant. Do not puncture the exterior skin or surface of the backer material. A screwdriver is prohibited for use on this project.

3.5.4 Using the approved tool, smoothly and uniformly place the backup material to the depth indicated on the drawings or otherwise required, compressing the backer material 25% to 33% and securing a positive fit.

3.5.5 Install backing material to a depth to provide a caulked joint meeting the depth requirement as set out in the sealant manufacturer's specifications.

3.6 MIXING

3.6.1 Mix materials in strict accordance with sealant manufacturer's instructions.

3.7 APPLICATION

3.7.1 Sealant:

1. Apply sealant in accordance with manufacturer's written instructions.
2. Mask edges of joint where irregular surface or sensitive joint border exist to provide neat joint.
3. Apply sealant in continuous beads.
4. Apply sealant using gun with proper size nozzle.
5. Ensure that the new sealant is adhered to substrates a minimum of 6 to 10 mm at each side of joint.
6. Use sufficient pressure to fill voids and joints solid.
7. Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.
8. Tool exposed surfaces before skinning begins to give slightly concave shape. Tooling to be performed by proper metal or wood tool. Finger tooling joints will not be accepted.
9. Remove excess compound promptly as work progresses and upon completion.
10. Metal to Glass Joints:
    1. Remove existing sealant flush or slightly sloped outwards of joint, as required, by suitable methods without damage to adjacent surfaces.
    2. Fill joint with sealant in accordance with manufacturer's specifications, with a minimum 3 mm bite onto the glass surfaces and a minimum 3 mm onto and overlapping the aluminum glazing stops to provide a neat convex shape.
    3. Finish joints smooth, free of wrinkles, air pockets, and embedded foreign materials.
11. Brick to Metal/Concrete Joint
    1. Remove existing sealant, as required, by suitable methods without damage to adjacent surfaces.

2. Clean surfaces of all joints and spaces to be sealed in an approved manner. Ensure that surfaces are sound, free of dust, grease, other contaminants, or laitance which may adversely affect the adhesion of the sealant. Clean surfaces with an approved solvent or cleaner.

3. Prime inner face surfaces of the joints, in accordance with sealant manufacturer's Specification, to provide full adhesion and to prevent staining of face surfaces at joints.

4. Pack joints tightly with sealant backing. Ensure rod is not punctured during installation.

5. Fill joints with sealant in accordance with manufacturer's Specifications.

6. Finish joints smooth, free of wrinkles, air pockets, and embedded foreign materials.

12. Metal to Metal Joints

1. Remove existing sealant flush or slightly sloped outwards of joint, as required, by suitable methods without damage to adjacent surfaces.

2. Clean surfaces of all joints and spaces to be sealed in an approved manner. Ensure that surfaces are sound, free of dust, grease, other contaminants, or laitance which may adversely affect the adhesion of the sealant. Clean surfaces with an approved solvent or cleaner.

3. Prime inner face surfaces of the joints, in accordance with sealant manufacturer's Specification, to provide full adhesion and to prevent staining of face surfaces at joints.

4. Fill joints with sealant in accordance with manufacturer's Specifications, with a 3 mm overlap onto the metal surfaces on each side of the joint, providing a neat convex shape.

5. Finish joints smooth, free of wrinkles, air pockets, and embedded foreign materials.

3.7.2 Preformed Silicone Seal:

1. Masking: Apply masking tape outlining area where silicone seal will be applied.

2. Sealant: Apply bead of silicone sealant on each side of joint and 6 mm inside masking tape.

3. Applied bead diameter: 3 mm

4. Minimum bonding area: 9 mm

5. Silicone seal: Within 10 minutes of sealant application, press silicone extrusion into wet sealant. Apply consistent pressure with roller to ensure uniform contact with 9 mm minimum bonding area.

6. Apply or tool fillet bead on up slope edge of seal.

7. Complete horizontal joints prior to vertical joints. Lap vertical seal over seal on horizontal joint.

8. At joint ends, cut extrusion with razor knife.

9. Cleaning: Remove masking tape and excess sealant.

3.7.3 Curing:

1. Cure sealants in accordance with sealant manufacturer's instructions.

2. Do not cover up sealants until proper curing has taken place.

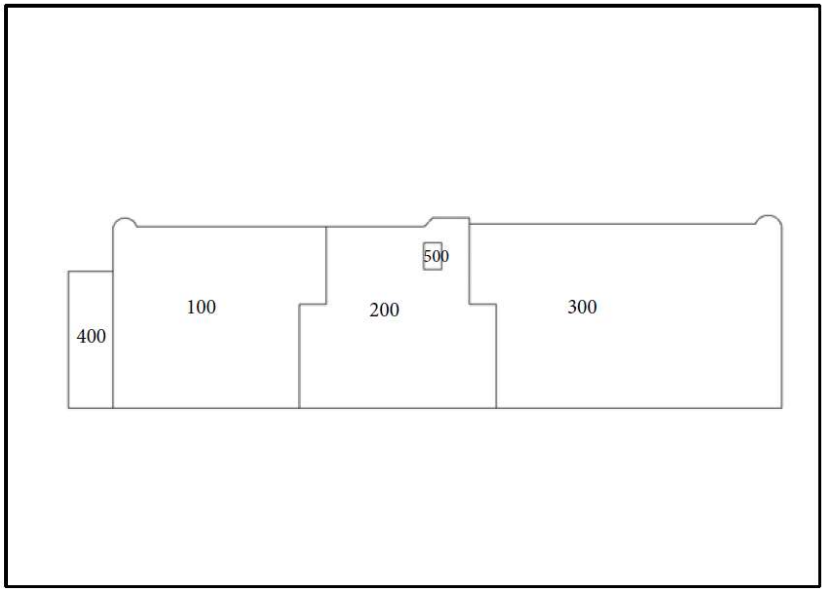
3.8 CLEANING

3.8.1 Clean adjacent surfaces immediately and leave work neat and clean.

3.8.2 Remove excess and droppings, using recommended cleaners as work progresses.

3.8.3 Remove masking tape after initial set of sealant.

END OF SECTION



Building / Roof Level	Condition	Area (SF) (Approx.)	Roof System	Estimated Install Date
12188 224 Str. / 100	Poor	4,100	Modified Bitumen	2003
12188 224 Str. / 200	Poor	3,550	Modified Bitumen	2003
12188 224 Str. / 300	Poor	6,215	Modified Bitumen	2003
12188 224 Str. / 400	Poor	690	Modified Bitumen	2003
12188 224 Str. / 500	Poor	54	Modified Bitumen	2003

Professional Seal

No.	Issue Description	2024-02-01

ROOFING REPLACEMENT AT
12184 224 STREET, MAPLE RIDGE,
BC.

Project Title:

Designed By: A.S	Scale: N.T.S
Drawn By: A.S	Date: 2024-02-01

Drawing Title

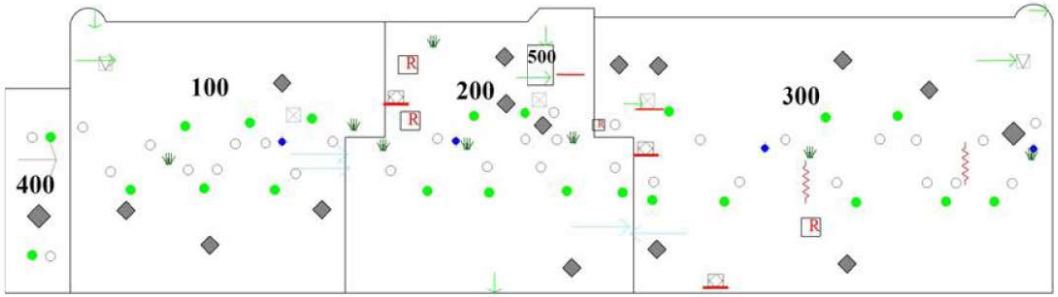
SITE LAYOUT

Drawing Number

R001

TRI-TECH PINNACLE
ROOF & BUILDING ENVELOPE CONSULTANTS

N



Legend

Control Joint — Expansion Joint

Roof Top Units

- HVAC on Curb
- HVAC on Sleepers
- Roof Hatch
- Fan on Curb
- Unit on Sleepers
- Skylight
- Brick Chimney

Projections

- Furnace Stack
- Soil Stack
- Pitch Pan
- Vent Stack

Drainage

- Drain
- Scupper

Miscellaneous

- Gas Line
- Roof Anchor
- Core Test
- Satellite Dish

Problem Indicators

- Blister
- Blueberries
- Wind Scour
- Temporary Repair
- XXXXX Flashing Problem
- Debris
- Ridging
- Metal Flashing Deficiency
- Bare felt
- Base Flashing Deficiency
- Ponding water
- Membrane Deficiency

* Note: -U indicates an unused item

TRI-TECH PINNACLE GROUP INC.
73 INDUSTRIAL PARKWAY NORTH - UNIT 3 - AURORA - ONTARIO - L4G 4C4
TELEPHONE (905) 503-1300 FAX (905) 503-2002
INFO@TTGP.CA

CLIENT
CAPREIT

PROJECT
12188 224 Street, Maple Ridge, BC

DATE	SCALE
September 20, 2022	N.T.S.
FILE NO. 221246	DRAWING Key Plan

Professional Seal

No.	Issue Description	2024-02-01

ROOFING REPLACEMENT AT
12184 224 STREET, MAPLE RIDGE, BC.

Project Title:

Designed By: A.S	Scale: N.T.S
Drawn By: A.S	Date: 2024-02-01

Drawing Title

SITE KEY PLAN

Drawing Number

R002

R-100 (LADDER ACCESS)

Roof Hatch

DESCRIPTION & USE

- For roof openings 762 mm x 914 mm (2’6” x 3’0”)
- Skylight version provides economical natural lighting to stair wells and small rooms
- Used for ladder access

FEATURES & BENEFITS (BETTER BY DESIGN)

- **Heavy Gauge Construction -** Built to withstand live loads up to 40 lbs (18 kg) per square foot.
- **Choice of Metal -** Hatches can be fabricated from galvanized steel (coated in a grey primer paint), mill finish utility grade aluminum, stainless steel or copper.
- **Easy to Install -** Pre-punched holes in the curb flange allow for quick fastening to the roof deck.
- **Superior Thermal Performance -** Fully insulated up to R-20 value. Suited for high efficiency buildings.
- **Hold Open Arms -** Door is locked in an open position to allow for safe egress and ingress.
- **Weathertight -** Doors are sealed with a durable neoprene gasket.
- **Kick Plate -** Replaces the exterior handle providing zero entry points for water.
- **Inside and Outside Latch Releases -** Internal latch includes a padlock hasp for locking. Outer padlock hasp is optional.
- **Torsion Bar Operation -** The hidden torsion bar design provides a full 7.5 sq. ft. of area for obstruction free roof access (available on standard model; heli coil available on R-20 model).

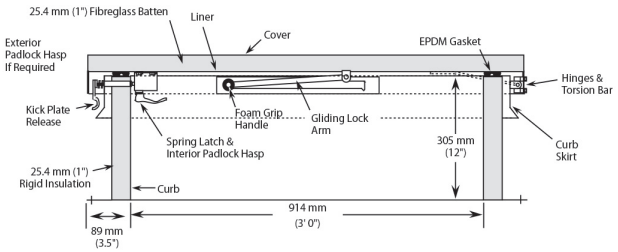
ROOF HATCH OPTIONS

- Safety Bar Handle
- Safety Rail System
- Wind Gust Control Unit
- Skylight Domes
- Vandal Grid
- Higher Curbs
- Stainless Steel Hardware
- Gas Spring

Note: For roof hatches larger than 3’ x 3’ or with 2 or more guided door supports, the option to factory install the hold open lock mechanism is available when the location of the stair access is known. If the stair access location is not known, a field kit can be purchased.

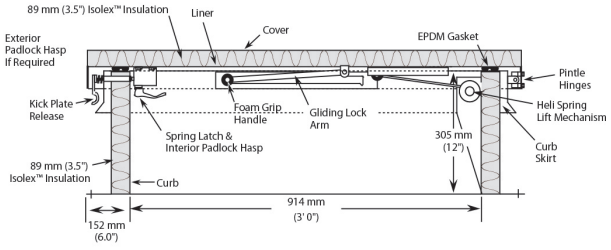
TECHNICAL DATA

Standard



Metal	Curb	Door	Liner	Weight
G Galv. Steel	14 ga.	14 ga.	22 ga.	77 kg. (170 lbs)
A Aluminum	11 ga.	11 ga.	18 ga.	47 kg. (105 lbs)

R-20



Metal	Curb	Door	Liner	Weight
G Galv. Steel	14 ga.	14 ga.	22 ga.	82 kg. (180 lbs)
A Aluminum	11 ga.	11 ga.	18 ga.	52 kg. (115 lbs)

continued on back

Visit our video channels: https://vimeo.com/channels/lexcoren

lexcor.net