

**PROJECT MANUAL FOR**

**Roof Replacement**  
**Lunenburg Town Hall**

**119 Cumberland St.,**  
**Lunenburg, Nova Scotia**

Prepared for:



119 Cumberland St., Lunenburg, Nova Scotia B0J 2C0  
T: 902-634-4410 | [www.townoflunenburg.ca](http://www.townoflunenburg.ca)

Client Project No.: TOL2025014

Prepared by



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FSA Project No.: 25141DA

August 2025



<b>Division</b>	<b>Section</b>	<b>Title</b>	<b>Pages</b>
<b>Division 00</b>		<b>Procurement and Contracting Requirements</b>	
	00 21 00	Information to Tenderers .....	4
	00 30 00	Available Information .....	1
	00 41 43	Tender Form.....	4
	00 53 43	Form of Agreement.....	4
<b>Division 01</b>		<b>General Requirements</b>	
	01 00 11	General Requirements .....	7
	01 10 00	Scope of Work .....	3
	01 14 00	Work Restrictions .....	2
	01 23 10	Alternatives.....	1
	01 31 19	Project Meetings.....	2
	01 33 00	Submittal Procedures .....	4
	01 35 29.06	Health and Safety Requirements .....	4
	01 35 43	Environmental Procedures .....	1
	01 41 00	Regulatory Requirements.....	1
	01 45 00	Quality Control.....	2
	01 52 00	Construction Facilities .....	2
	01 56 00	Temporary Barriers and Enclosures.....	2
	01 61 00	Common Product Requirements .....	4
	01 71 00	Examination and Preparation .....	1
	01 74 00	Cleaning .....	2
	01 77 00	Closeout Procedures .....	2
	01 78 00	Closeout Submittals.....	3
<b>Division 06</b>		<b>Wood, Plastics and Composites</b>	
	06 10 53	Miscellaneous Rough Carpentry .....	4
<b>Division 07</b>		<b>Thermal and Moisture Protection</b>	
	07 26 00	Vapour Retarders .....	3
	07 31 13	Asphalt Shingles.....	7
	07 52 00	Modified Bituminous Membrane Roofing (Cold Applied).....	22
	07 62 00	Sheet Metal Flashing and Trim.....	8
	07 72 33	Roof Hatches.....	5
	07 92 00	Joint Sealants .....	5
		<b>Appendices</b>	
	Appendix A	Lunenburg Townhall Renovation Building Condition Assessment, September 23, 2022 (FSA # 22057DA) .....	113

**END OF SECTION**



**ARCHITECTURAL**

- 1 Existing Roof Plan
- 2 Roof Plan
- 3 Details
- 4 Details

**END OF SECTION**



Name of Project: Roof Replacement Lunenburg Town Hall  
Location: 119 Cumberland Street, Lunenburg NS

Owner: Town of Lunenburg  
119 Cumberland Street, PO Box 129, Lunenburg NS B0J 2C0

Consultant: Fishburn Sheridan Atlantic Inc.  
71 Avondale Road, Newport Landing NS B0N 2A0

## 1.1 GENERAL

- .1 A complete Tender includes the following:
  - .1 The Tender Form in its entirety, with all pages and spaces for entry of information by Tenderers filled in as instructed.
  - .2 Acknowledgment of addenda received by the Tenderer during the tendering period.
  - .3 Tender Security (refer to applicable clause herein).

## 1.2 TENDER SUBMISSION

- .1 Hard Copy Tender Submission
  - .1 Submit completed tender form for above project in sealed envelope marked as follows:

TENDER

TOL2025014

Roof Replacement Lunenburg Town Hall

Closing up to 2:00 PM, local time September 02, 2025

Town of Lunenburg  
119 Cumberland Street  
Lunenburg NS B0J 2C0

and must be delivered to the following address **up until 2:00 p.m.**, local time, on **September 02, 2025**, hereinafter referred to as the Tender Closing.

Town of Lunenburg  
119 Cumberland Street  
PO Box 129  
Lunenburg NS. B0J 2C0

Attention: Lisa Kendall

- .2 Electronic Tender Submission
  - .1 Tenders shall be submitted exclusively by email to [townoflunenburg.ca/purchasing.html](mailto:townoflunenburg.ca/purchasing.html) **up until 2:00 p.m.**, local time, on **September 02, 2025**, hereinafter referred to as the Tender Closing. Subject heading of email to read "TOL2025014 - Roof Replacement Lunenburg Town Hall – TENDER SUBMISSION." The time stamp of the email received by [townoflunenburg.ca/purchasing.html](mailto:townoflunenburg.ca/purchasing.html) will be used to determine if the submission was received on time – not the time it was emailed by the sender. Last minute submissions are not recommended.

**1.3 SAFETY CERTIFICATION**

- .1 Submit with tender a copy of tenderer's current and valid safety accreditation issued by Nova Scotia Workers' Compensation Board or Certificate of Recognition (COR) issued by Construction Safety Nova Scotia.
- .2 Out-of-province tenderers with a current and valid COR from a Canadian Federation of Construction Safety Associations member shall obtain and submit, with tender, a current and valid Letter of Good Standing from Construction Safety Nova Scotia.

**1.4 WORKERS' COMPENSATION**

- .1 Submit with tender a copy of tenderer's current and valid clearance letter issued by the Workers' Compensation Board of Nova Scotia.
- .2 Out-of-province tenderers shall submit, with tender, a current and valid clearance letter from a government workers' compensation board but must register with the Nova Scotia Workers' Compensation Board prior to being awarded the Contract.

**1.1 TENDER OPENING**

- .1 Tenders will be opened on [day] [date] [time] [place]. Opening will be public.
- .2 Tender amendments will be disclosed at public openings.

**1.2 ACCURACY OF REFERENCING**

- .1 Indexing and cross-referencing are for convenience only.

**1.3 CONDITIONS OF TENDERING**

- .1 Take full cognizance of content of all Contract Documents in preparation of tender. Refer to Section 00 41 43 – Tender Form, Subsection 1.3.7 for a complete list of Contract Documents.

**1.4 NON-MANDATORY PRE-BID SITE MEETING**

- .1 A non-mandatory pre-bid site meeting will be held for Tenderers to walk the site and review the project scope and deliverables.
- .2 Non-mandatory Pre-Bid Site Meeting will be held on **August 19, 2025, at 9:00AM.**
- .3 All Tenderers are required to sign in upon arrival.
- .4 Questions by Tenderers must be submitted electronically, in writing within the stipulated Question period. Appropriate responses will be published in a project Addendum and made available to Tenderers.

**1.5 TENDERERS TO INVESTIGATE**

- .1 Tenderers will be deemed to have familiarized themselves with existing site and working conditions and all other conditions which may affect performance of the Contract. No plea of ignorance of such conditions as a result of failure to make all necessary examinations will be accepted as a basis for any claims for extra compensation or an extension of time.

**1.6 CLARIFICATION AND ADDENDA**

- .1 Notify Consultant not less than two (2) Working Days before tender closing of omissions, errors, or ambiguities found in Contract Documents. If Consultant considers that correction, explanation, or interpretation is necessary, a written addendum will be issued. All addenda will form part of Contract Documents.
- .2 Confirm in the tender form that all addenda have been received. Tenderers are solely responsible to obtain and acknowledge the receipt of addenda at time of tender closing.

**1.7 PREPARATION OF TENDER**

- .1 Legibly complete tender form provided with Project Documents. Tender all items and fill in all blanks. Have corrections initialed by person signing tender.

**1.8 TENDER SECURITY**

- .1 Provide tender security in the minimum amount of ten percent (10%) of total price including HST, shall be in favour of the Owner, and shall be in the form of a Certified Cheque, irrevocable Letter of Credit or a Bid Bond which shall guarantee to the Owner that in the event of the successful Tenderer declining to enter into a formal agreement with the Owner as called for in the Contract Documents, or declining or neglecting to provide the Insurance or Contract Security required by the Contract Documents, then the Owner will be reimbursed the additional cost of accepting another tender or Tender Security amount, whichever is the lesser.
- .2 Where a bid bond is submitted it may be submitted in a digital format provided it meets the following criteria:
  - .1 The version submitted by the Tenderer must be verifiable by the Owner with respect to the totality and wholeness of the bond form, including: the content; all digital signatures; all digital seals; with the Surety Company, or an approved verification service provider of the Surety Company.
  - .2 The version submitted must be viewable, printable and storable in standard electronic file formats acceptable to the Owner, and in a single file. Allowable formats include pdf.
  - .3 The verification may be conducted by the Owner immediately or at any time during the life of the bond and at the discretion of the Owner with no requirement for passwords or fees.
  - .4 The results of the verification must provide a clear, immediate and printable indication of pass or fail regarding the requirements contained herein.
  - .5 Bonds failing the verification process will NOT be considered to be valid.
  - .6 Bonds passing the verification process will be treated as original and authentic.

**1.9 INSURANCE**

- .1 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. Include this form with Bid submission.
- .2 Refer to CCDC 41 for insurance requirements.

**1.10 FORM OF AGREEMENT**

- .1 Form of Agreement is attached for information purposes only until execution of the Contract.

**1.11 RETURN OF TENDER SECURITY**

- .1 Tender security will be returned to:
  - .1 All except the three (3) lowest acceptable tenderers within five (5) Working Days of tender opening.
  - .2 Two (2) remaining unsuccessful tenderers within ten (10) Working Days of date of award.
  - .3 Successful tenderer following receipt by Owner of executed agreement, specified contract security, and insurance documents.

**1.12 AMENDMENT OR WITHDRAWAL OF TENDER**

- .1 Tenders may be amended or withdrawn prior to tender closing.
- .2 Amendment of individual Unit Prices is the only acceptable price amendment. Amendments shall not disclose either original or revised total price.

- .3 Head amendment or withdrawal as follows: "Amendment/ Withdrawal of tender for TOL205014 - Roof Replacement Lunenburg Town Hall". Sign as required for tender and submit by email or to the address given for receipt of tenders. In order to be considered, submissions shall be received prior to time of tender closing.

**1.13 OFFER, ACCEPTANCE, REJECTION**

- .1 The Owner reserves the right to accept or reject any tender and to cancel the tendering process and reject all tenders at any time prior to the award of Contract without incurring any liability to affected tenderers.

**END OF SECTION**

**1.1 AVAILABLE INFORMATION TO BIDDERS**

- .1 Available information is attached separately.
- .2 Available report(s) and document(s) are for information only. Neither Consultant nor Owner assumes any liability for items extracted from documents. These documents do not form part of Contract Documents
  - .1 Documents provided by the Owner are not included under, nor governed by Fishburn Sheridan Atlantic Inc.'s seal.
- .3 Building Condition Assessment:
  - .1 A copy of a building condition assessment report and related letters prepared by Owner's consultant for the Place of the Work are attached as file name Appendix A - 22057DA-Lunenburg Townhall Renovation Building Condition Assessment - 2022-09-23. Refer to report as following:
    - .1 "Building Condition Assessment, Lunenburg Townhall, 119 Cumberland Street, Lunenburg Nova Scotia", dated 23 September, 2023, prepared by Fishburn Sheridan Atlantic Inc

**END OF SECTION**



**1.1 SALUTATION:**

- .1 To: Town of Lunenburg  
119 Cumberland Street, PO Box 129, Lunenburg NS B0J 2C0
- .2 For: TOL2025014  
Roof Replacement Lunenburg Town Hall  
119 Cumberland Street, Lunenburg, Nova Scotia
- .3 From: [Name of Contractor]  
[Address]

**1.2 TENDERER DECLARES:**

- .1 That this tender was made without collusion or fraud.
- .2 That the proposed Work was carefully examined.
- .3 That the tenderer was familiar with local conditions.
- .4 That Contract Documents and Addenda No. \_\_ to \_\_ inclusive were carefully examined.
- .5 That all the above were taken into consideration in preparation of this tender.

**1.3 TENDERER AGREES:**

- .1 To enter into a contract to supply all labour, material and equipment and to do all work necessary to construct the Work as described and specified herein for the unit prices stated in Subsection 1.4 hereunder, Schedule of Quantities and Unit Prices.
- .2 That the estimated Contract Price shall be the sum of the products of the tendered unit prices multiplied by the estimated quantities in Subsection 1.4 hereunder excluding Harmonized Sales Tax (HST).
- .3 That this tender is valid for acceptance for sixty (60) days from tender closing.
- .4 To execute in triplicate the Form of Agreement and forward same together with the specified contract security and insurance documents to the Owner within ten (10) Working Days of written notice of award.
- .5 That failure to enter into a formal contract and provide specified insurance documents and contract security within time required will constitute grounds for forfeiture of tender security.
- .6 That if tender security is forfeited, Owner will retain difference in money between amount of tender and amount for which Owner legally contracts with another party to perform the Work and will refund balance, if any, to tenderer.

- .7 Contract Documents include:
  - .1 Information to Tenderers
  - .2 Tender Form
  - .3 Agreement, Definitions and General Conditions of the CCDC 2 - 2020
  - .4 Specifications (per Table of Contents)
  - .5 Drawings (per List of Drawings)
  - .6 Addenda issued during bidding period

**1.4 SCHEDULE OF QUANTITIES AND UNIT PRICES**

Item No.	Description	Unit of Measurement	Estimated Quantity	Unit Price	Item Total
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BID PRICING

1.	Asphalt Shingle Replacement, including all flashing, detailing, sealant, electrical, mechanical and other items to provide a completed roofing system.	m <sup>2</sup>	_____	_____	_____
2.	Modified Bitumen Roofing Replacement, including all flashing, detailing, sealant, electrical, mechanical and other items to provide a completed roofing system.	m <sup>2</sup>	_____	_____	_____
3.	Other, Specify: _____	—	_____	_____	_____

SUBTOTAL \$ \_\_\_\_\_

CONTRACT PRICE (EXCLUDING HST) \$ \_\_\_\_\_ (A)

HARMONIZED SALES TAX (14% of Contract Price) \$ \_\_\_\_\_ (B)

TOTAL BID PRICE (A + B) \$ \_\_\_\_\_

TENDERER'S HST REGISTRATION NO. \_\_\_\_\_

**1.5 COMPLETION TIME**

.1 Tenderer agrees to complete the Work within \_\_\_\_ weeks of written notification of award.

**1.6 SIGNATURES\***

DATED THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 20\_\_\_\_\_.

\_\_\_\_\_  
Name of Tenderer

\_\_\_\_\_  
Witness

\_\_\_\_\_  
Signature of Signing Officer

\_\_\_\_\_  
Name and Title (Printed)

\_\_\_\_\_  
Witness

\_\_\_\_\_  
Signature of Signing Officer

\_\_\_\_\_  
Name and Title (Printed)

\*NOTE: Tenders submitted by or on behalf of any Corporation must be signed in the name of such Corporation by a duly authorized officer(s) or agent(s).

**END OF SECTION**

This Agreement made on the \_\_ day of \_\_\_\_ in the year\_\_.

**BY AND BETWEEN**

\_\_\_\_\_ [Owner]

hereinafter called the "Owner"

and

\_\_\_\_\_ [Contractor]

hereinafter called the "Contractor"

**The Owner and the Contractor** agree as follows:

**ARTICLE A1 - THE WORK**

.1 The Contractor shall:

.1 Perform the Work required by the Contract Documents for

\_\_\_\_\_ [Project Name] [Project Number]

located at \_\_\_\_\_ [Project Location]

for which the Agreement has been signed by the parties, and for which

*(Insert above the name of the Engineer)*

is acting as and is hereinafter called the "Engineer"

and

.2 do and fulfill everything indicated by this Agreement, and

.3 commence the Work by the \_\_ day of \_\_\_\_\_ in the year \_\_\_\_\_ and attain Ready-for-Takeover of the work as confirmed by the Engineer by the \_\_ day of \_\_\_\_\_ in the Year \_\_.

**ARTICLE A2 – AGREEMENTS AND AMENDMENTS**

.1 This Contract supersedes all prior negotiations, representations, or agreements, either written or oral, relating in any manner to the work, including the bidding documents that are not expressly listed in Article A3 of the Agreement.

### ARTICLE A3 - CONTRACT DOCUMENTS

- .1 The following is an exact list of the Contract Documents referred to in Article A1.1 of this Agreement and as defined in subsection 6 of Section 00 71 00 DEFINITIONS. This list is subject to subsequent amendments in accordance with the provisions of the Contract Documents.
  - .1 Information to Tenderers.
  - .2 Tender Form
  - .3 Form of Agreement
  - .4 Specifications (per Table of Contents)
  - .5 Drawings (per List of Drawings)
  - .6 Addenda
    - .1 [Addendum 1]
    - .2 [Addendum 2]

### ARTICLE A4 - CONTRACT PRICE

- .1 The Contract Price is the sum of the products of the estimated quantities multiplied by the appropriate Unit Prices in the tender form excluding the amount of Harmonized Sales Tax.
- .2 The Contract Price is \$ \_\_\_\_\_
- .3 All amounts shall be in Canadian funds.
- .4 The amounts shall be subject to adjustment as provided in the Contract Documents.

### ARTICLE A5 - PAYMENT

- .1 The Owner shall pay the Contractor in Canadian funds for the performance of the Contract.
- .2 The Owner shall make monthly payments on account to the Contractor for the Work performed, as certified by the Engineer, subject to a 10% holdback.
- .3 The amount of the monthly payments shall be calculated as follows:
  - .1 The quantity for each pay item on which actual work has been performed shall be measured.
  - .2 For each Unit Price item this quantity shall be multiplied by the applicable Unit Price as provided in the Tender Form.
  - .3 For each lump sum item, multiply the percent complete by the value of the lump sum item.
  - .4 The total value of work completed for the payment period shall be calculated by adding the total of the products for all pay items from 3.2 and 3.3 of this Article.
  - .5 The amount of the monthly payment shall be determined by deducting the 10% holdback and the total of all previous payments from the total value of such completed work as determined under 3.4 of this Article.
  - .6 To the amount calculated above, the Harmonized Tax shall be added.
- .4 The last day of the payment period shall be the \_\_\_\_ of the month.
- .5 Upon Substantial Performance of the Work as certified by the Engineer the Owner shall pay to the Contractor the holdback monies then due.
- .6 Upon the issuance of the final certificate for payment as certified by the Engineer, the Owner shall pay to the Contractor the balance of monies then due.
- .7 In the event of loss or damage occurring where payment becomes due under the property and boiler insurance policies, payment shall be made to the Contractor.

- .8 If the Owner fails to make payment to the Contractor as it becomes due under the terms of the Contract, interest shall be payable as follows:
- .1 The annual interest rate applicable to the contract is \_\_\_% compounded monthly.
  - .2 Interest shall be calculated on the overdue balance from the due date.

**ARTICLE A6 - RECEIPT OF AND ADDRESSES FOR NOTICES IN WRITING**

- .1 Notices in writing shall be addressed to the recipient at the address set out below.
- .2 The delivery of a notice in writing shall be by hand, courier, prepaid first class mail, facsimile or e-mail.
- .3 A notice in writing delivered by one party in accordance with this Contract shall be deemed to have been received by the other party on the date of delivery if delivered by hand or courier, or if sent by mail it shall be deemed to have been received five (5) Working Days after the date on which it was mailed.
- .4 A notice in writing sent by facsimile or e-mail shall be deemed to have been received on the date of its transmission provided that if such day is not a Working Day or if it is received after the end of normal business hours at the place of receipt, then it shall be deemed to have been received at the opening of business at the place of receipt on the first Working Day following the transmission thereof.
- .5 An address for a party may be changed by notice in writing setting out the new address delivered to the other party in accordance with this Article.

.1 The Owner at \_\_\_\_\_ [Address of Owner] \_\_\_\_\_

\_\_\_\_\_

.2 The Contractor at \_\_\_\_\_ [Address of Contractor] \_\_\_\_\_

\_\_\_\_\_

.3 The Engineer at \_\_\_\_\_ [Address of Engineer] \_\_\_\_\_

\_\_\_\_\_

**ARTICLE A7 - SUCCESSION**

- .1 The aforesaid Contract Documents are to be read into and form part of the Agreement and the whole shall constitute the Contract between the parties and subject to law and the provisions of the Contract Documents shall inure to the benefit of and be binding upon the parties hereto, their respective heirs, legal representatives, successors and assigns.

**ARTICLE A8 - RIGHTS AND REMEDIES**

- .1 No action or failure to act by the Owner, Engineer, or Contractor shall constitute a waiver of any right or duty afforded any of them under the Contract, nor shall any such action or failure to act constitute an approval of or acquiescence in any breach thereunder, except as may be specifically agreed in writing.

**ARTICLE A9 - TIME**

- .1 Time shall be construed as being of the essence of the Contract.

In witness whereof the parties hereto have executed this Agreement and by the hands of their duly authorized representatives.

SIGNED AND DELIVERED

In the presence of:

OWNER

\_\_\_\_\_  
Name of Owner

\_\_\_\_\_  
Witness

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Name and Title of Person Signing

\_\_\_\_\_  
Witness

\_\_\_\_\_  
Signature

\_\_\_\_\_  
*Name and Title of Person Signing*

CONTRACTOR

\_\_\_\_\_  
Name of Contractor

\_\_\_\_\_  
Witness

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Name and Title of Person Signing

\_\_\_\_\_  
Witness

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Name and Title of Person Signing

*N.B. Where legal jurisdiction, local practice or Owner or Contractor requirements calls for proof of authority to execute this document, attach such proof of authority in the form of a certified copy of a resolution naming the representative(s) authorized to sign the Agreement for and on behalf of the corporation or partnership.*

**END OF SECTION**

## **1.1 CONTRACT**

- .1 The Contract shall be in the form of a CCDC 2-2020 stipulated price contract. The following associated supplemental appendices, which are comprised of the Division 01 and technical specifications, shall further form part of the overall Contract.

## **1.2 DEFINITIONS**

- .1 "CONSULTANT" and "Fishburn Sheridan & Associates Ltd.", "Fishburn Sheridan Atlantic Inc." and "FSA" are synonymous.
- .2 "OWNER" and "Town of Lunenburg" and "The Town" are synonymous.
- .3 "CONSTRUCTOR" and "CONTRACTOR" are synonymous.

## **1.3 OTHER CONTRACTORS**

- .1 Other Contractors, Sub-Contractors and the Owner's own forces, may be performing work on the site at the same time as the Work is being done under this Contract. The successful bidder shall provide all reasonable co-operation and collaboration with these other forces to ensure a timely completion of the work, taking into consideration and without undermining its own role as the "Constructor".

## **1.4 USE OF THE SITE**

- .1 Carry out the Work so as to have the least possible interference and disturbance to the normal use of the premises. The successful bidder is expected to include in the bid an allowance for the performance of off-hours work should it be required to conform with the above.
- .2 Maintain services to existing building and provide for personnel and vehicle access.
- .3 Restrict construction access to and from site to approved location. Do not allow construction traffic to block entrances or exits for any reason.
- .4 Co-ordinate any interference with Owner's operation in this area and abide by Owner's direction in this regard. In cases of conflicting requirements, Owner's operation takes precedence but all reasonable effort to accommodate Contractor's needs will be made.

## **1.5 EXISTING SERVICES**

- .1 Before commencing work, establish location and extent of service lines in area of Work and notify Consultant of findings.
- .2 Remove abandoned service lines within 2.4 m of structures. Cap or otherwise seal lines at cut-off points as directed by Consultant.
- .3 Services are to be left operational unless otherwise authorized by Owner.
- .4 Unless otherwise specified, the Contractor will be responsible for disconnection, relocation, re-installation and extending all services required to facilitate work under this Contract. Co-ordinate work with the Owner and provide minimum 48 hours notification if services are to be interrupted.

**1.6 CUTTING AND PATCHING**

- .1 Generally patch and "make good" any and all surfaces cut, damaged, exposed, or disturbed to comply with any appropriate statutory requirements and to the Owner's acceptance.

**1.7 PROTECTION OF PROPERTY**

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

**1.8 PRECONSTRUCTION CONDITIONS**

- .1 Prior to commencing mobilization, the Contractor shall record preconstruction/ existing conditions by photographing all items that could potentially be claimed by the Owner or Consultant as damaged during the course of the work.
- .2 The Contractor shall document heritage elements including architectural woodwork, trims, finishes, paints, etc., within the project scope and/ or which may be impacted by the project scope. The Contractor shall provide image documentation of existing conditions to the Consultant prior to the commencement of the Work.
- .3 These items should include adjacent wall areas, landscaping, pavement, windows, paint finishes and any roof top equipment on or adjacent to the subject work areas.
- .4 All efforts must be made to protect, conserve and/ or stabilize all heritage elements.
- .5 Should results of the Work negatively impact the heritage elements of the building and/or surrounding property, the Contractor shall notify the Consultant, in writing prior to engaging in such activities. The Contractor shall not proceed with the Work without written confirmation from the Owner, Owner's Heritage representative and/or the Consultant.
- .6 In the event that the Contractor is permitted to store materials or equipment on the Owner's property or adjacent property, these areas shall be reviewed with photographic record of preconstruction conditions prior to mobilization of materials or equipment.
- .7 In the event that the Contractor is permitted to store materials or equipment at roofs or use adjacent roofs to access the subject roofs, these areas shall also be reviewed for preconstruction damage and photographed.
- .8 Provide Consultant and Owner with photographic record of preconstruction photographs a minimum of 24 hours prior to commencing mobilization.
- .9 All such damages observed during final or post construction review that cannot be verified as pre-existing, are potentially considered the Contractor's responsibility to rectify.

## **1.9 FIRE PROTECTION**

- .1 Provide and maintain temporary fire protection equipment during the performance of the Work as required by insurance companies and governing codes, regulations and by-laws having jurisdiction.
- .2 Generally, open flames and 'hot work' are not permitted on site. Work requiring the generation of open flames (welding, soldering, etc.) cannot be performed until an Owner's Permit has been issued. It is the responsibility of the successful bidder to apply for here said permit prior to engaging in any such activities.
- .3 Open fires and burning of rubbish are not permitted on site.

## **1.10 OCCUPATIONAL HEALTH AND SAFETY**

- .1 Follow the Occupational Health and Safety Act. For the purposes of the act, the person or company contracted to carry out the work shall be deemed the "**Constructor**".
- .2 Hazardous materials, not identified by the Owner, may be encountered at the worksite. Use all necessary precautions when handling such material. It is possible that asbestos may exist in some form and if encountered the Contractor is responsible to notify the Owner and to follow Ministry of Labour regulations governing the handling of asbestos in the workplace.
- .3 The Owner may cause those who do not comply with the O.H.S.A. and Regulations to be escorted from the site.
- .4 Temporary overhead protection will be required at ground street level sidewalks, where pedestrians are walking. All entrances shall have overhead protection. Additional protection will also be required to prevent material from falling to the street from overhead scaffold platforms.

## **1.11 PROTECTION OF BUILDING FINISHES AND EQUIPMENT**

- .1 Prevent movement, settlement, or other damage to other adjacent structures, utilities, and parts of building to remain in place. Provide bracing and shoring if required.
- .2 Keep noise, dust, and inconvenience to occupants to a minimum.
- .3 Protect building systems, services and equipment. Protect all furnishings within work area with (6 mil) polyethylene film during construction. Remove film during non-construction hours and leave premises in clean, unencumbered and safe manner for normal daytime function.
- .4 Provide temporary dust tight screens, partitions, covers, railings, barricades, supports and/or other protection as required. Protect workers, finished areas of work and public.

## **1.12 PARKING**

- .1 Parking is not available on site. Nearby street parking and various parking lots are available on a first come first serve basis. Parking related fees to be carried by the Contractor.
- .2 All vehicles must be parked in designated parking areas (except for reasonable loading and unloading of equipment and/or materials to a local entrance).

Contractor's vehicles on site shall be limited to reasonable loading and unloading of equipment and/or materials to a local entrance. Failure to observe these requirements may result the vehicle being ticketed and/or towed.

### **1.13 SIGNS AND ADVERTISEMENTS**

- .1 Signs and advertisements of the Contractor and Consultant are permitted to be used on site upon approval by the Owner.
- .2 All other signage required by law and for the safety of others shall be the responsibility of the Contractor to post and maintain throughout the course of the project.
- .3 Upon completion of the Work, all signs shall be removed except those specifically directed by the Owner to remain.

### **1.14 CLEAN-UP**

- .1 Maintain the work area in tidy condition, free from the accumulation of waste products and debris.
- .2 Remove waste and materials regularly so as to maintain a tidy work site. Do not dispose of any waste in the Owner's facilities unless specifically directed to do so by authorised personnel.
- .3 Store materials in areas specially designated by the Owner. Dispose of this debris in a legal manner so as to avoid causing a hazard to occupants and visitors on site.

### **1.15 MATCHING**

- .1 Where new work occurs in or adjacent to existing work, it is the intent that colours and textures of visible finishes within these areas shall be matched to the satisfaction of the Owner.

### **1.16 PERMITS, FEES, CERTIFICATES**

- .1 A Building Permit may be required for this work at the discretion of the municipality. Upon award of the project, the Contractor shall submit all required documentation to the Authority Having Jurisdiction in order to determine if a permit is required.
- .2 Should the Authority Having Jurisdiction determine a permit IS NOT required, the Contractor shall receive confirmation in writing prior to work commencing.
- .3 Should the Authority Having Jurisdiction determine a permit IS required, the Contractor shall obtain and pay for all required permits necessary to complete the work.
- .4 Arrange and pay for all inspection certificates required by Authorities having jurisdiction, (i.e., Electrical Safety Authority Certificate). Provide the Owner with copies of these certificates upon completion.

**1.17 DISRUPTION OF SERVICES**

- .1 The Contractor is responsible to provide adequate written notice to the Owner of any interruption of services (i.e., mechanical, electrical etc.) for the connection of new services or the alteration of existing.
- .2 The Contractor is expected to co-operate reasonably with the Owner in the scheduling of service interruptions.

**1.18 SANITARY FACILITIES**

- .1 Temporary sanitary facilities will be provided by the Constructor in compliance with the Occupational Health and Safety Act.

**1.19 POWER**

- .1 Maximum power of 110V will be available at no cost. Any connection to this power source will be done at the Contractor's expense and liability, and in accordance with the Canadian Electrical Code.

**1.20 WATER SUPPLY**

- .1 Water supply is available at no cost. Connection and disconnection will be at Contractor's expense and liability.

**1.21 TEMPORARY FACILITIES**

- .1 Temporary sanitary facilities will be provided by the Constructor in compliance with Provincial and regional Occupational Health and Safety Acts and Regulations for Construction Projects. The Owner's sanitary facilities will not be available for the Contractor's use.

**1.22 DOCUMENTS REQUIRED**

- .1 Maintain at the job site, one copy each of the following:
  - .1 Original Plans and Specifications and completed Form of Tender.
  - .2 Building Department stamped drawings if required.
  - .3 Any changes to Drawings or Details.
  - .4 Shop Drawings and any changes.
  - .5 Addenda.
  - .6 Change Orders.
  - .7 Site Instructions.
  - .8 Contractor's Safety Policy.
  - .9 Safety Data Sheets.

**1.23 WORK SCHEDULE**

- .1 All off-site activities related to the project are required to commence immediately upon award, including site measurements, provision of shop drawings, material ordering, etc. The intent is to ensure that all long-lead delivery items required to complete the project are available immediately upon commencement of on-site activities.

- .2 All on-site activities related to the project are to commence no later than **two (2) weeks after contract execution**, weather permitting. Where weather affects the commencement date, the Contractor, Owner and Consultant shall agree to a reasonable start date.
- .3 Substantial Performance of the Contract shall be achieved no later than **June 12, 2026**. On-site activities occurring after this date will be restricted as required to accommodate the normal operation of the facility, including after hours and weekend work, at the cost of the Contractor.
- .4 Within 5 working days of intent to award, provide a schedule showing anticipated progress stages and final completion of the Work within the specified time period, indicating each trade and inter-phasing. Allow for expected poor weather days.

#### **1.24 MAINTAIN WARRANTIES**

- .1 Ensure that work of this Contract does not invalidate warranties on adjacent work. Provide written confirmation and arrange and pay for all services and costs to ensure that warranties on adjacent work are maintained.
- .2 Warranties on adjacent work include, but are not limited to:
  - .1 Newly installed roof systems.
- .3 The Contractor accepts full and complete responsibility of maintaining existing warranties.

#### **1.25 CHANGES IN WORK**

- .1 All changes to the Contract Documents which result in an extra or credit to the Contract amount or time are not to be executed until written instructions have been received and the extra or credit agreed to in writing by all parties.
- .2 Execute variations, alterations and substitutions that do not affect the intent, function, duration, or Contract amount, as instructed by the Consultant.
- .3 Where the Contractor's price quotation for a Change Order results in a change to the Contract Price, the Contractor's entitlement to a fee for combined overhead and profit in the quotation shall be as follows, as applicable:

<b>Change in Contract Price (excluding value added taxes)</b>	<b>Contractor mark-up on work performed by own forces</b>	<b>Contractor mark-up on subcontractor work</b>	<b>Subcontractor mark-up on subcontractor work</b>
Credit of \$0 or more	0%	0%	0%
Increase of \$0 to less than \$50,000	10%	5%	10%
Increase of \$50,000 or more	5%	5%	5%

Interpretive note: The mark-ups in the above table are flat not graduated, (i.e. the table is not intended to provide one set of mark-ups for the first \$49,999 of the change and a different set of mark-ups for the balance).

- .4 Changes to the work that are considered urgent by the Owner shall be acted upon by the Contractor on the basis of a written field instruction to be confirmed by a Change Order. Costs are to be kept and presented along with all appropriate timesheet vouchers and bills of materials, or fixed sum if work is done by a Sub-Contractor on a lump sum basis.
- .5 Consultant may issue Supplemental Instructions authorizing minor changes in the Work, not involving adjustment to the Contract Price or the Contract Time, on Consultant's standard forms.
  - .1 If the Contractor considers a Supplemental Instruction to require an adjustment in Contract Price or Contract Time, the Contractor shall promptly notify the Consultant and the Owner in writing and shall not proceed with any work related to the Supplemental Instruction pending receipt of a Change Order, a Change Directive, or, in accordance with the dispute resolution provisions of the General Conditions of Contract, a Notice in Writing of a dispute and instructions to proceed.

**END OF SECTION**



## **1.1 GENERAL**

- .1 Work under this contract is to replace several Roof Areas at Lunenburg Town Hall, located at 119 Cumberland Street in Lunenburg, Nova Scotia.
- .2 Roof upgrades shall be as follows:
  - .1 General repairs to asphalt shingles at Roof Areas 101 and all elevations near-vertical elevations of mansard roof.
  - .2 Install new metal flashings and repair existing asphalt shingle roof between Roof Areas 101 and 501.
  - .3 Replacement of modified bituminous (mod. bit.) roof system at Roof Area 201.
  - .4 Replacement of existing roofing at all dormers with new metal panel roofing.

## **1.2 SCOPE**

- .1 Mobilization, Access and Site Protection:
  - .1 Provide labour and materials necessary to mobilize the site for re-roofing work. All work to be completed in a single mobilization.
  - .2 Provide pre-existing condition photo log of areas to be accessed and immediately adjacent work including interior faces of walls.
  - .3 Apply for and obtain all necessary road closure and sidewalk closure or encroachment permits as become necessary for the completion of the work.
  - .4 Provide all necessary signage, barriers, temporary ramps, guard rails and overhead protection necessary to appropriately delineate the extents of the site during re-roofing work and to maintain means of access and egress from the building.
  - .5 Provide all necessary means of access to complete the scope of work described, including to facilitate Consultant's review of the work. Maintain such access equipment available on site until such time as the work is deemed completed.
  - .6 Where existing mechanical equipment is indicated to be removed and reinstalled, the contractor is responsible to confirm the condition and operation of the noted equipment. This is to be done to confirm operational parameters, physical condition and existing deficiencies. Where concerns are observed, the Contractor is to bring such concerns to the Owner's attention prior to the removal of existing equipment. Provide documentation confirmation of the completion of the precondition assessment. Commencement of work on mechanical equipment implies acceptance of condition and responsibility of final mechanical equipment operations.
- .2 The scope of work of the project is summarized in the following items, however this is not intended to be an all-encompassing list of the scope of work. The inclusion of work in any of the documents is to be read as though it is included in all of them.
- .3 Roof Replacement:

- .1 Provide the necessary labour and materials to complete the removal of the existing roofing system, existing curbs, sheet metal flashings and membrane down to the existing structural deck and install new roofing system as specified herein. The new roof systems shall be as identified on the drawings.
  - .2 Supply and installation of related rough carpentry at parapets and curbs.
  - .3 Supply and install all sheet metal caps, counter flashings, scuppers, torch stops, fascia and all other roof related metal flashings required to complete roof installation.
  - .4 Supply and installation of all sealants required to seal the transition of membrane and related metal detailing and the termination of sheet metal and non-membrane surfaces.
  - .5 Removal and reinstallation of all roof mounted mechanical and electrical equipment, including disconnection and reconnection of existing mechanical and electrical services. Existing roof curbs to be removed and replaced with premanufactured sheet metal insulated curbs. Extend services as required to accommodate raised curb height.
- .4 General:
- .1 Supply and installation of all sealants required to seal the transition of membrane and related metal detailing, the termination of sheet metal and non-membrane surfaces, perimeter edges of all door and window openings, and where indicated.
  - .2 All other work indicated, implied or required to complete the scope of work referenced in this specification or on the drawings.
- .5 Mechanical and Electrical
- .1 Remove and reinstall existing mechanical equipment where indicated.
  - .2 Modify and extend all existing service connections including gas lines, ductwork, electrical feeds, etc., required for the normal operation of the equipment following reinstallation.
- .6 De-mobilization and Close-out
- .1 Complete a deficiency review with the Consultant prior to demobilization of access equipment from site.
  - .2 Demobilize all equipment, tools and material from site.
  - .3 Complete a final walk over of the site to identify damage caused in the course of construction.
  - .4 Upon reinstallation of existing mechanical equipment, the contractor shall verify the condition and operation of existing mechanical equipment in order to return equipment to preconstruction condition as reported prior to construction.
  - .5 Contractor to repair or replace damaged finishes and site elements where construction activities have caused the damage. The pre-construction photo log will determine original condition of elements in question.

- .6 Provide 2-year labour and materials warranty as well as any standard manufacturer warranties for products used.
- .7 Provide digital copy of as-built drawings in .pdf format.
- .8 Close-out any active permits related to the construction activities and provide written proof of such.

**1.3 WORK SEQUENCE**

- .1 Construct Work in stages to accommodate Owner's continued use of premises during construction as required.
- .2 Construct Work in stages to provide for continuous public usage. Do not close off public usage of facilities until use of one stage of Work will provide alternate usage.
- .3 Co-ordinate Progress Schedule and co-ordinate with Owner Occupancy during construction.
- .4 Maintain fire access and control.

**END OF SECTION**



**1.1 ACCESS AND EGRESS**

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

**1.2 USE OF SITE AND FACILITIES**

- .1 The size and location of Work and site storage areas to be determined at the pre-bid site meeting.
- .2 Areas of Work and storage on site will be designated by the Owner before commencement of Work at the pre-bid meeting. The boundaries established thereby shall be strictly enforced.
- .3 The Contractor may request the Owner to relocate or expand the site storage area during the Execution of the Work.
- .4 The decision to make changes to the site storage areas will be at the discretion of the Owner or Consultant.
- .5 Do not unreasonably encumber the site with materials, stored products or equipment that will interfere with the daily operations of the Owner.
- .6 Prior to commencement of any Work, carefully inspect and determine the capability of set up and traffic areas to support anticipated loads without doing damage. Provide protection to protect all landscaping and paving, including but not limited to, installing heavy wood planking under dolly wheels, trailers disposal bins, and/or completely over all areas used to hoist or remove debris from the site.
- .7 Prior to the commencement of any Work, inspect and provide an itemized list of existing property damage accompanied with photographs or video of site conditions and turn a copy over to the Consultant. This graphic information shall be used to resolve potential disputes, should they occur.
- .8 Commencement of Work by the Contractor is proof that the Contractor accepts the surfaces as satisfactory.
- .9 Clearance must be obtained from the Owner, or their assign, before gaining vehicular access during regular working hours.
- .10 All vehicles must exercise extreme care when frequenting the property; in particular, in areas near or adjacent to pedestrian traffic. Provide flag-person at front/rear of vehicles to protect the public and property from traffic during garbage removal, material/plant delivery or other such activities during working hours.
- .11 Locate equipment and materials at existing service roadways to provide minimal disruption to building occupants, pedestrians, staff and/or vehicular traffic.

- .12 When required, close off access routes by placing barricades or posting guards to prevent access to unauthorized personnel. Unauthorized personnel shall be defined as the public and/or anyone not directly involved with the execution, supervision or inspection of the Work.

### **1.3 EXISTING SERVICES**

- .1 Notify Consultant and utility companies of intended interruption of services and obtain required permission.
- .2 Where Work involves breaking into or connecting to existing services, give Consultant 48 hours of notice for necessary interruption of mechanical or electrical service throughout course of work. Keep duration of interruptions minimum. Carry out interruptions after normal working hours of occupants, preferably on weekends.
- .3 All gas line piping work shall be performed in compliance with TSSA regulations.
- .4 Construct barriers in accordance with Section 01 52 00 – Construction Facilities and Section 01 56 00 - Temporary Barriers and Enclosures.
- .5 Provide for personnel, pedestrian and vehicular traffic.

### **1.4 SPECIAL REQUIREMENTS**

- .1 Ensure protection of the building and products that are sensitive to damage by moisture. Do not work during rain, snow, fog or periods of high humidity. Stop Work well before the onset of inclement weather or when inclement weather appears imminent.
- .2 As governed by design intent, apply each part of the roofing system only when surfaces and weather allow for a successful application and performance of completed Work.
- .3 Observe minimum temperature and weather conditions set out in manufacturer's printed recommendations. Proceed with Work when temperatures are below 5°C with the mutual documented agreement between the Contractor and material supplier that, with the material and method used, the specified installation under the conditions will be successfully achieved.

### **1.5 BUILDING SMOKING ENVIRONMENT**

- .1 Comply with smoking restrictions. Smoking is not permitted.

**END OF SECTION**

**1.1 GENERAL**

- .1 This section specifies general requirements and procedures for the approval and use of alternatives. Additional requirements may be specified in individual sections of the specifications.

**1.2 ALTERNATIVES**

- .1 Requests for “acceptance” of materials in addition to those presently established as “acceptable” by the Contract documents shall be submitted in writing to the Consultant at the following address:

Fishburn Sheridan Atlantic Inc.  
71 Avondale Road  
Newport, NS B0N 2A0  
Attention: Nathaniel Isnor  
Email: [nathaniel.isnor@fsaeng.com](mailto:nathaniel.isnor@fsaeng.com)

- .2 Such a request shall be accompanied with a complete description of the alternative proposed including the advantages and cost savings that could be realized. In addition, provide the name of manufacturer brand name, technical data and samples of both the specified and proposed substitute items.
- .3 Identify and allow for in the bid price, any submission of alternatives to products specified including any changes required in the related work and modifications surrounding work as required to complete the project under each alternative designated. A later claim by the Bidder for any addition to the Contract price, because of changes in work necessitated by use of alternatives shall not be considered.
- .4 In any case, where substitutions are permitted, the Contractor shall bear the cost to evaluate and test the equality of the materials and pay any design charges and costs to change the working drawings and specifications that occur due to their use.
- .5 Approval of alternative materials will be communicated to all bidders via addendum during the tender period. Alternatives presented to the consultant which were not previously approved may or may not be accepted at the discretion of the Owner and Consultant.

**END OF SECTION**



**1.1 GENERAL**

- .1 This Section specifies general requirements and procedures for project meetings. Additional requirements may be specified in individual Sections of the specifications.

**1.2 ADMINISTRATIVE**

- .1 Consultant will administer the pre-construction meeting.
- .2 The Consultant will distribute electronic written notice in advance of each meeting date to the Owner, the Contractor, the Subcontractor and suppliers, as required.
- .3 The Owner/ Owner's Representative will reproduce and distribute copies of minutes, after meetings and transmit to meeting participants and affected parties not in attendance.
- .4 Representatives of the Owner, the Contractor, the Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of the party each represents.

**1.3 PRE-CONSTRUCTION MEETING**

- .1 The Consultant will request a meeting of parties to the Contract to discuss and resolve administrative procedures and responsibilities. Attendance of the roofing superintendent and foremen is compulsory. The Contractor's cost to attend this meeting shall be accounted for in their Base Bid submission.
- .2 Agenda to include:
  - .1 Appointment of official representative of participants in the Work.
  - .2 Schedule of Work.
  - .3 Schedule of submission of materials list, shop drawings, samples, colour chips. Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.
  - .4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00 - Construction Facilities.
  - .5 Site security, emergency response and protective measures shall be established.
  - .6 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
  - .7 The Contractor is to provide for review, their photographic pre-start condition survey documents.
  - .8 Record drawings in accordance with Section 01 33 00 - Submittal Procedures.
  - .9 Maintenance manuals in accordance with Section 01 78 00 - Closeout Submittals.

- .10 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 - Closeout Submittals.
- .11 Monthly progress claims, administrative procedures, photographs, hold backs.
- .12 Appointment of inspection and testing agencies or firms.
- .13 Insurances, transcript of policies.

**1.4 PROGRESS MEETINGS**

- .1 During course of Work, scheduled progress meetings may be required until project completion. Timing and frequency will be determined at the pre-construction meeting.
- .2 Agenda to include the following:
  - .1 Review, approval of minutes of previous meeting.
  - .2 Review of Work progress since previous meeting.
  - .3 Field observations, problems, conflicts.
  - .4 Problems which impede construction schedule.
  - .5 Review of off-site fabrication delivery schedules.
  - .6 Corrective measures and procedures to regain projected schedule.
  - .7 Revision to construction schedule.
  - .8 Progress schedule, during succeeding work period.
  - .9 Review submittal schedules: expedite as required.
  - .10 Maintenance of quality standards.
  - .11 Pending changes and substitutions.
  - .12 Review proposed changes for effect on construction schedule and on completion date.
  - .13 Other business.

**END OF SECTION**

**1.1 GENERAL**

- .1 This Section specifies general requirements and procedures for submittals. Additional requirements may be specified in individual Sections of the specifications.

**1.2 ADMINISTRATIVE**

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

**1.3 SHOP DRAWINGS AND PRODUCT DATA**

- .1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2 Submit drawings stamped and signed by professional engineer registered or licensed in Province of work.
- .3 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.

- .4 Allow 2 days for Consultant's review of each submission.
- .5 Adjustments made on shop drawings by Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Consultant prior to proceeding with Work.
- .6 Make changes in shop drawings as Consultant may require, consistent with Contract Documents. When resubmitting, notify Consultant in writing of revisions other than those requested.
- .7 Accompany submissions with transmittal letter, in duplicate, 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.
- .8 Submissions include:
  - .1 Date and revision dates.
  - .2 Project title and number.
  - .3 Name and address of:
    - .1 Subcontractor.
    - .2 Supplier.
    - .3 Manufacturer.
  - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
  - .5 Details of appropriate portions of Work as applicable:
    - .1 Fabrication.
    - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
    - .3 Setting or erection details.
    - .4 Capacities.
    - .5 Performance characteristics.
    - .6 Standards.
    - .7 Operating weight.
    - .8 Wiring diagrams.
    - .9 Single line and schematic diagrams.
    - .10 Relationship to adjacent work.
- .9 After Consultant's review, distribute copies.

- .10 Submit an electronic copy of shop drawings for each requirement requested in specification Sections and as Consultant may reasonably request.
- .11 Submit an electronic copy of product data sheets or brochures for requirements requested in specification Sections and as requested by Consultant where shop drawings will not be prepared due to standardized manufacture of product.
- .12 Submit an electronic copy of test reports for requirements requested in specification Sections and as requested by Consultant.
  - .1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.
  - .2 Testing must have been within 3 years of date of contract award for project.
- .13 Submit an electronic copy of certificates for requirements requested in specification Sections and as requested by Consultant.
  - .1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.
  - .2 Certificates must be dated after award of project contract complete with project name.
- .14 Submit an electronic copy of manufacturer's instructions for requirements requested in specification Sections and as requested by Consultant.
  - .1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.
- .15 Submit an electronic copy of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Consultant.
- .16 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .17 Submit an electronic copy of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Consultant.
- .18 Delete information not applicable to project.
- .19 Supplement standard information to provide details applicable to project.
- .20 If upon review by Consultant, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

#### **1.4 SAMPLES**

- .1 Submit for review samples in duplicate as requested in respective specification Sections. Label samples with origin and intended use.
- .2 Deliver samples prepaid to Consultant's business address.
- .3 Notify Consultant in writing, at time of submission of deviations in samples from requirements of Contract Documents.
- .4 Where colour, pattern or texture is criterion, submit full range of samples.
- .5 Adjustments made on samples by Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Consultant prior to proceeding with Work.
- .6 Make changes in samples which Consultant may require, consistent with Contract Documents.
- .7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

#### **1.5 PHOTOGRAPHIC DOCUMENTATION**

- .1 Submit electronic copy of colour digital photography, standard resolution monthly with progress statement and as directed by Consultant.
- .2 Project identification: name and number of project and date of exposure indicated.

#### **1.6 CERTIFICATES AND TRANSCRIPTS**

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

**END OF SECTION**

## 1.1 REFERENCES

- .1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations
- .2 Province of Nova Scotia
  - .1 Occupational Health and Safety Act, Chapter 7 of the Acts of 1996, as amended.
  - .2 Workplace Health and Safety Regulations, N.S. Reg. 52/2013, amended to N.S. Reg. 119/2024.
- .3 Health Canada / Workplace Hazardous Materials Information System (WHMIS 2015).
  - .1 Safety Data Sheet (SDS).

## 1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
  - .1 Results of site specific safety hazard assessment.
  - .2 Results of safety and health risk or hazard analysis for site tasks and operation found in work plan.
- .3 Submit 2 copies of Contractor's authorized representative's work site health and safety inspection reports to authority having jurisdiction, daily / weekly, Consultant.
- .4 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
- .5 Submit copies of incident and accident reports.
- .6 Submit WHMIS 2015 SDS - Safety Data Sheets.
- .7 Consultant will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 2 days after receipt of plan. Revise plan as appropriate and resubmit plan to Consultant within 1 day after receipt of comments from Consultant.
- .8 Consultant's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .9 Medical Surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to Consultant.

### **1.3 FILING OF NOTICE**

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

### **1.4 SAFETY ASSESSMENT**

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

### **1.5 REGULATORY REQUIREMENTS**

- .1 Do Work in accordance with Section 01 41 00 - Regulatory Requirements.

### **1.6 GENERAL REQUIREMENTS**

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

### **1.7 RESPONSIBILITY**

- .1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
- .2 Contractor will be responsible and assume the role Constructor as described in the Occupational Health and Safety Act.
- .3 Contractor shall be the Principal Contractor as described in the Occupational Health and Safety Act for only their scope and areas of work as defined and described this project specification.
- .4 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.

### **1.8 COMPLIANCE REQUIREMENTS**

- .1 Comply with Occupational Health and Safety Act, S.N.S. 1996, c. 7 and Workplace Health and Safety Regulations, N.S. Reg. 52/2013 amended to N.S. Reg. 119/2024.

- .2 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.

### **1.9 UNFORSEEN HAZARDS**

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

### **1.10 HEALTH AND SAFETY CO-ORDINATOR**

- .1 Employ and assign to Work, competent and authorized representative as Health and Safety Coordinator. Health and Safety Coordinator must:
  - .1 Have site-related working experience specific to activities associated with roof replacement operations.
  - .2 Have working knowledge of occupational safety and health regulations.
  - .3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.
  - .4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.
  - .5 Be on site during execution of Work and report directly to and be under direction of Registered Occupational Hygienist / Certified Industrial Hygienist / site supervisor.

### **1.11 POSTING OF DOCUMENTS**

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

### **1.12 CORRECTION OF NON-COMPLIANCE**

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

**1.13 POWDER ACTUATED DEVICES**

- .1 Use powder actuated devices only after receipt of written permission from Consultant.

**1.14 WORK STOPPAGE**

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

**END OF SECTION**

**1.1 INFORMATION SUBMITTALS**

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

**1.2 FIRES**

- .1 Fires and burning of rubbish on site is not permitted.

**1.3 DRAINAGE**

- .1 Provide temporary drainage and pumping required to keep site free from water.
- .2 Ensure pumped water into waterways, sewer or drainage systems is free of suspended materials.
- .3 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

**1.4 NOTIFICATION**

- .1 Consultant will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations, permits and other elements of Contractor's Environmental Protection Plan.
- .2 Contractor: after receipt of such notice, inform Consultant of proposed corrective action taken and take such action for approval by Consultant.
  - .1 Do not take action until after receipt of written approval by Consultant.
- .3 Consultant will issue stop work order until satisfactory corrective action has been taken.
- .4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

**1.5 CLEANING**

- .1 Clean in accordance with Section 01 74 00 – Cleaning.
- .2 Waste Management: separate waste materials for reuse and recycling in accordance with Municipal regulations.
- .3 Do not bury rubbish and waste materials on site.
- .4 Ensure public waterways, storm and sanitary sewers remain free of waste and volatile materials disposal.

**END OF SECTION**



## **1.1 REFERENCES TO REGULATORY REQUIREMENTS**

- .1 Perform Work in accordance with National Building Code of Canada (NBC), Ontario Building Code (OBC), National Fire Code of Canada (NFCC) and National Plumbing Code of Canada (NPCC), 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.
- .2 Specific design and performance requirements listed in specifications or indicated on Drawings may exceed minimum requirements established by referenced Building Code; these requirements will govern over the minimum requirements listed in Building Code.
  - .1 Meet or exceed requirements of:
    - .1 Contract documents.
    - .2 Specified standards, codes and referenced documents.
    - .3 CRCA.
    - .4 Various CSA, CGSB and ASTM standards referenced in the applicable Sections.
    - .5 Gas pipes and equipment to national or provincial gas utilization codes.
    - .6 Manufacturer's printed literature.

## **1.2 HAZARDOUS MATERIAL DISCOVERY**

- .1 Asbestos: Demolition of spray or trowel-applied asbestos is hazardous to health. Stop work immediately when material resembling spray or trowel-applied asbestos is encountered during demolition work. Notify Consultant.
- .2 Mould: Stop work immediately when material resembling mould is encountered during demolition work. Notify Consultant.

## **1.3 BUILDING SMOKING ENVIRONMENT**

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

**END OF SECTION**



## **1.1 GENERAL**

- .1 This Section specifies the general requirements and procedures for quality control. Additional requirements may be specified in individual Sections of the specifications.

## **1.2 INSPECTION**

- .1 Allow Consultant access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress, as required.
- .2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Consultant instructions, or law of Place of Work.
- .3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
- .4 Consultant will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction.

## **1.3 ACCESS TO WORK**

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

## **1.4 PROCEDURES**

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

## **1.5 REJECTED WORK**

- .1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Consultant as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
- .2 Make good other Contractor's work damaged by such removals or replacements promptly.

- .3 If in opinion of Consultant it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, 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 Consultant.

**1.6 MOCK-UPS**

- .1 Prepare mock-ups for Work specifically requested in specifications. Include for Work of Sections required to provide mock-ups.
- .2 Construct in locations acceptable to Consultant.

**END OF SECTION**

**1.1 GENERAL**

- .1 This Section specifies the general requirements and procedures for construction facilities. Additional requirements may be specified in individual Sections of the specifications.

**1.2 HOISTING**

- .1 Provide, operate and maintain hoists or cranes required for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for their use of hoists.
- .2 Hoists and cranes to be operated by qualified operators.

**1.3 SITE STORAGE/LOADING**

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

**1.4 CONSTRUCTION PARKING**

- .1 Parking is not available on site, local parking is available nearby.
- .2 Provide and maintain adequate access to project site.
- .3 Clean runways and taxi areas where used by Contractor's equipment.

**1.5 EQUIPMENT, TOOL AND MATERIALS STORAGE**

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

**1.6 SANITARY FACILITIES**

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

**1.7 PROTECTION AND MAINTENANCE OF TRAFFIC**

- .1 Provide access and temporary relocated roads as necessary to maintain traffic.
- .2 Maintain and protect traffic on affected roads during construction period except as otherwise specifically directed by Consultant.

- .3 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
- .4 Protect travelling public from damage to person and property.
- .5 Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.
- .6 Verify adequacy of existing roads and allowable load limit on these roads. Contractor: responsible for repair of damage to roads caused by construction operations.
- .7 Construct access and haul roads necessary.
- .8 Haul roads: constructed with suitable grades and widths; sharp curves, blind corners, and dangerous cross traffic shall be avoided.
- .9 Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.
- .10 Dust control: adequate to ensure safe operation at all times.
- .11 Location, grade, width, and alignment of construction and hauling roads: subject to approval by Consultant.
- .12 Lighting: to assure full and clear visibility for full width of haul road and work areas during night work operations.
- .13 Provide snow removal during period of Work.
- .14 Remove, upon completion of work, haul roads designated by Consultant.

**1.8 CLEAN-UP**

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

**END OF SECTION**

**1.1 INSTALLATION AND REMOVAL**

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

**1.2 GUARD RAILS AND BARRICADES**

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

**1.3 WEATHER ENCLOSURES**

- .1 Provide weather tight closures to unfinished door and window openings, tops of shafts and other openings in floors and roofs.
- .2 Close off floor areas where walls are not finished; seal off other openings; enclose building interior work for temporary heat.
- .3 Design enclosures to withstand wind pressure and snow loading.

**1.4 DUST TIGHT SCREENS**

- .1 Provide dust tight screens to localize dust generating activities, and for protection of workers, finished areas of Work and public.
- .2 Maintain and relocate protection until such work is complete.

**1.5 ACCESS TO SITE**

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

**1.6 PUBLIC TRAFFIC FLOW**

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

**1.7 FIRE ROUTES**

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

**1.8 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY**

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

**1.9 PROTECTION OF BUILDING FINISHES**

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

**1.10 OVERHEAD PROTECTION**

- .1 Provide, as required, at all entrance/egress locations, suitable overhead protection. Level of acceptance to include temporarily secured scaffold assembly with adequately attached plywood roof decking and appropriate signage.

**END OF SECTION**

## **1.1 REFERENCES**

- .1 Within text of each specifications section, reference may be made to reference standards.
- .2 Conform to these reference standards, in whole or in part as specifically requested in specifications.
- .3 If there is question as to whether products or systems are in conformance with applicable standards, Consultant reserves right to have such products or systems tested to prove or disprove conformance.

## **1.2 QUALITY**

- .1 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.
- .2 Procurement policy is to acquire, in cost effective manner, items containing highest percentage of recycled and recovered materials practicable consistent with maintaining satisfactory levels of competition. Make reasonable efforts to use recycled and recovered materials and in otherwise utilizing recycled and recovered materials in execution of work.
- .3 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.
- .4 Should disputes arise as to quality or fitness of products, decision rests strictly with Consultant based upon requirements of Contract Documents.
- .5 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
- .6 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

## **1.3 AVAILABILITY**

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

#### **1.4 STORAGE, HANDLING AND PROTECTION**

- .1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
- .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
- .3 Store products subject to damage from weather in weatherproof enclosures.
- .4 Store sheet materials, lumber and roofing products on flat, solid supports and keep clear of ground. Slope to shed moisture.
- .5 Remove and replace damaged products at own expense and to satisfaction of Consultant.
- .6 Touch-up damaged factory finished surfaces to Consultant's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

#### **1.5 TRANSPORTATION**

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

#### **1.6 MANUFACTURER'S INSTRUCTIONS**

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

#### **1.7 QUALITY OF WORK**

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

**1.8 CO-ORDINATION**

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

**1.9 CONCEALMENT**

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

**1.10 REMEDIAL WORK**

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

**1.11 LOCATION OF FIXTURES**

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

**1.12 FASTENINGS**

- .1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.
- .2 Prevent electrolytic action between dissimilar metals and materials.
- .3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.
- .4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.
- .5 Keep exposed fastenings to a minimum, space evenly and install neatly.
- .6 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

**1.13 FASTENINGS - EQUIPMENT**

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

**1.14 PROTECTION OF WORK IN PROGRESS**

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

**1.15 EXISTING UTILITIES**

- .1 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.
- .2 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

**END OF SECTION**

**1.1 EXISTING SERVICES**

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

**1.2 LOCATION OF EQUIPMENT AND FIXTURES**

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

**1.3 RECORDS**

- .1 Record locations of maintained, re-routed and abandoned service lines.

**1.4 SUBSURFACE CONDITIONS**

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

**END OF SECTION**



## **1.1 PROJECT CLEANLINESS**

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris.
- .2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Consultant. Do not burn waste materials on site, unless approved by Consultant.
- .3 Clear snow and ice from work areas and bank/pile snow in designated areas only.
- .4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .5 Provide on-site garbage bin containers for collection of waste materials and debris.
- .6 Dispose of waste materials and debris at designated dumping areas off site.
- .7 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .8 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- .9 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .10 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

## **1.2 FINAL CLEANING**

- .1 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
- .3 Prior to final review remove surplus products, tools, construction machinery and equipment.
- .4 Remove waste products and debris other than that caused by Owner or other Contractors.
- .5 Remove waste materials from site at regularly scheduled times or dispose of as directed by Consultant. Do not burn waste materials on site, unless approved by Consultant.

- .6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .7 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.
- .8 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, and floors.
- .9 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
- .10 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.
- .11 Remove dirt and other disfiguration from exterior surfaces.
- .12 Clean and sweep roofs, gutters, areaways, and sunken wells.
- .13 Sweep and wash clean paved areas.
- .14 Clean equipment and fixtures to sanitary condition; clean or replace filters of mechanical equipment.
- .15 Clean roofs, downspouts, and drainage systems.

**END OF SECTION**

## **1.1 GENERAL**

- .1 This Section specifies the general procedures for closeout submittals. Additional requirements may be specified in individual Sections of the specifications

## **1.2 ADMINISTRATIVE REQUIREMENTS**

- .1 Acceptance of Work Procedures:
  - .1 Contractor's Inspection: Contractor: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
    - .1 Notify Consultant in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
    - .2 Request Consultant's inspection.
  - .2 Consultant's Inspection:
    - .1 Consultant and Contractor to inspect Work and identify defects and deficiencies.
    - .2 Contractor 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 Work: complete and ready for final inspection.
  - .4 Final Inspection:
    - .1 When completion tasks are done, request final inspection of Work by Consultant, and Contractor.
    - .2 When Work incomplete according to Owner and Consultant, complete outstanding items and request re-inspection.
  - .5 Declaration of Substantial Performance: when Consultant considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.
  - .6 Commencement of Lien and Warranty Periods: date of Owner's acceptance of submitted declaration of Substantial Performance to be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work.
  - .7 Final Payment:
    - .1 When Consultant considers final deficiencies and defects corrected and requirements of Contract met, make application for final payment.
  - .8 Payment of Holdback:

- .1 Provide proof of publication of the Certificate of Substantial Performance to Consultant.
- .2 Submit application for payment of holdback amount in accordance with contractual agreement.

**1.3 FINAL CLEANING**

- .1 Clean in accordance with Section 01 74 00 - Cleaning.
  - .1 Remove surplus materials, excess materials, rubbish, tools and equipment.

**END OF SECTION**

**1.1 GENERAL**

- .1 This Section specifies the general requirements for closeout submittals. Additional requirements may be specified in individual Sections of the specifications.

**1.2 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Prior to being granted Substantial Performance of the Work, submit to the Consultant, digital copies of operating and maintenance manuals in English. The manual will be reviewed and comments returned for final digital submission to the client.
- .3 Provide spare parts, maintenance materials and special tools of the same quality and manufacture as products provided in Work.
- .4 Provide evidence, if requested, for type, source and quality of products supplied.

**1.3 FORMAT**

- .1 Organize data as instructional manual.
- .2 Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.
- .3 Arrange content with Table of Contents.

**1.4 AS -BUILT DOCUMENTS AND SAMPLES**

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

**1.5 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS**

- .1 Record as-built information on set of opaque drawings, provided by Consultant, and return drawings to Consultant at Substantial Performance of the Work.
- .2 Record information concurrently with construction progress.

- .1 Do not conceal Work until required information is recorded.
- .3 Contract Drawings and shop drawings: mark each item to record actual construction, including:
  - .1 Measured depths of elements of foundation in relation to finish first floor datum.
  - .2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
  - .3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
  - .4 Field changes of dimension and detail.
  - .5 Changes made by change orders.
  - .6 Details not on original Contract Drawings.
  - .7 References to related shop drawings and modifications.
- .4 Specifications: mark each item to record actual construction, including:
  - .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
  - .2 Changes made by Addenda and change orders.
- .5 Other Documents: maintain manufacturer's certifications, inspection certifications, field test records, required by individual specifications sections.
- .6 Provide digital photos, if requested, for site records.

## **1.6 MATERIALS AND FINISHES**

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

## **1.7 DELIVERY, STORAGE AND HANDLING**

- .1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.
- .2 Store in original and undamaged condition with manufacturer's seal and labels intact.
- .3 Store components subject to damage from weather in weatherproof enclosures.

- .4 Store paints and freezable materials in a heated and ventilated room.
- .5 Remove and replace damaged products at Contractor's expense and for review by Consultant.

**1.8 WARRANTIES AND BONDS**

- .1 Contractors Warranty for Labour and Material:
  - .1 Submit 24-month labour warranty for materials workmanship, dated from the date of Substantial Performance.
  - .2 Make all necessary repairs and replacements within 48 hours of receipt of written notification.
  - .3 Provide written warranties, confirming above, issued on the corporate letterhead, signed and sealed by an authorized signing officer. The warranties will specifically reference the name of the Building, location and Owner.
  - .4 Nothing contained in this Article shall be construed as in any way restricting or limiting the liability in common law and statutory liability of the Contractor.
- .2 Manufacturer's Warranty:
  - .1 Submit 20-year asphalt shingle material warranty.
  - .2 Submit 15-year membrane material warranty.
- .3 Separate warranties may be indicated in individual specification sections.
- .4 Develop warranty management plan to contain information relevant to Warranties.
- .5 Submit warranty management plan to Consultant for approval.
- .6 Warranty management plan to include required actions and documents to assure that Owner receives warranties to which it is entitled.
- .7 Provide plan in narrative form and contain sufficient detail to make it suitable for use by future maintenance and repair personnel.

**END OF SECTION**



**Part 1 General**

**1.1 RELATED SECTIONS**

- .1 Section 07 62 00 – Sheet Metal Flashing and Trim.
- .2 Section 07 92 00 – Joint Sealants.

**1.2 REFERENCES**

- .1 ASTM International
  - .1 ASTM A653/A653M-15, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .2 CSA Group (CSA)
  - .1 CSA B111-1974 (R2003), Wire Nails, Spikes and Staples.
  - .2 CSA O141-23, Canadian Standard Lumber.
  - .3 CSA O151-17 (R2022), Canadian Softwood Plywood.
  - .4 CAN/CSA-80 Series.
- .3 National Lumber Grades Authority (NLGA)
  - .1 Standard Grading Rules for Canadian Lumber 2010.

**1.3 QUALITY ASSURANCE**

- .1 Lumber identification: By grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.
- .2 Plywood identification: By grade mark in accordance with applicable CSA Standards.

**1.4 MOCK-UPS**

- .1 Provide a 600 mm mock-up of wood blocking system, including closures for each detail or profile for review in a location designated by the Consultant in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Review mock-up to ensure design intent can be achieved. Verify all intersecting and adjoining elevations to ensure that continuity of roofing and closures can be achieved. Verify attachment, methods for securing and pullout strengths to ensure that work can support the anticipated loads and will remain in place against all wind, weather and service conditions without warping or deforming.

**1.5 PRECAUTIONS**

- .1 Provide temporary protection, to the satisfaction of the Consultant, to render all wood blocking watertight, if for any reason permanent membrane protection cannot be provided within the same day. Ensure the base of any curbs are temporarily sealed to prevent water from entering below the curb assembly, or

behind sheathing, should the roof assembly not be completed on the same day as the carpentry work.

## **1.6 DELIVERY, STORAGE, AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section with manufacturer's written instructions.
- .2 Delivery and acceptance requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and handling requirements:
  - .1 Store materials off ground, indoors, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store materials off ground with moisture barrier at both ground level and as a cover forming a well-ventilated enclosure, with drainage to prevent standing water.
  - .3 Replace defective or damaged materials with new.

## **Part 2 Products**

### **2.1 STRUCTURAL FRAMING AND BLOCKING**

- .1 Lumber: Unless specified otherwise, softwood, S4S, moisture content 19% or less in accordance with following standards:
  - .1 CSA O141.
  - .2 NLGA Standard Grading Rules for Canadian Lumber.
- .2 Furring, blocking, nailing strips, grounds, rough bucks, curbs, fascia backing and sleepers:
  - .1 S2S is acceptable for all surfaces.
  - .2 Board sizes: "Standard" or better grade.
  - .3 Dimension sizes: "Standard" light framing or better grade.
  - .4 Post and timbers sizes: "Standard" or better grade.

### **2.2 PANEL MATERIALS**

- .1 Canadian softwood plywood (CSP): To CSA O151.
  - .1 Urea-formaldehyde free.
- .2 Fire-retardant-treated wood and plywood: to CAN/CSA-80 Series, impregnated with fire-retardant chemicals in solution under high pressure.

### **2.3 FASTENERS**

- .1 Wood to wood fasteners: Wood screw #12 or as indicated, galvanized flat head, of sufficient length to completely penetrate through base minimum 25 mm.

- .2 Exposed fasteners for metal to wood or masonry: Use #10 cadmium plated hex screws with neoprene and steel washers. Minimum length 38 mm. Use lead shields, as required for anchoring. Colour of screw head to meet approval of Consultant.
  - .1 Standard of acceptance:
    - .1 Atlas Bolt.
    - .2 Rawl.
    - .3 Or accepted alternate.
  - .3 Nails, spikes and staples: To CSA B111.

## **2.4 ACCESSORIES**

- .1 Metal closure: 0.56 mm (26 ga.) galvanized steel unless otherwise shown or specified.
- .2 Self-adhered membrane: sheet air/vapour barrier to Section 07 26 00.

## **2.5 FINISHES**

- .1 Galvanizing: To ASTM A653/A653M, use galvanized fasteners for all work.
- .2 Interior paint: 2 coats interior acrylic latex, colour to match existing, eggshell.

## **Part 3 Execution**

### **3.1 GENERAL INSTALLATION**

- .1 Extend air/vapour barrier seals up vertical surfaces and curbs and onto the deck as shown on the Drawings, to provide continuity.
- .2 Slope the top of all wood blocking at the roof perimeter in towards the roof at a minimum of 5%, unless otherwise shown on the Drawings.
- .3 Comply with requirements of NBC, supplemented by the following paragraphs.
- .4 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.
- .5 Align and plumb faces of furring and blocking to tolerance of 1:600.
- .6 Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other work.
- .7 Install wood, fascia backing, nailers, curbs and other wood supports as required and secure using galvanized steel fasteners.

- .8 Install sleepers as indicated. Install level with weight distributed evenly on 25 mm Type 4 extruded polystyrene insulation or other support base as indicated.

### **3.2 SECUREMENT OF WOOD BLOCKING**

- .1 Comply with more stringent requirements as required by drawings or Building Code requirements. Increase number and spacing of all fasteners by 50% for 2400 mm from all outside roof corners.
- .2 Install fasteners to the design intent to hold all wood blocking permanently in place to prevent warping, deflection and to resist all wind and weather conditions.
- .3 Install fasteners in two rows in the direction of the grain, offset one to another in a staggered fashion by approximately 50%. All fasteners shall be placed minimum 10 mm from any edge of framing.
- .4 Unless specified otherwise, the number of fasteners shall be doubled at all outside parapet corners, for a distance of 3 m from the corner.
- .5 For any exposed fastening, provide touch-up paint as required to coat all exposed surfaces of screws damaged during the driving process.

### **3.3 ERECTION**

- .1 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.
- .2 Countersink bolts where necessary to provide clearance for other work.
- .3 Bevel leading edge of wood panel products on vertical applications to facilitate membrane installation and as detailed on drawings.

**END OF SECTION**

**Part 1 GENERAL**

**1.1 RELATED REQUIREMENTS**

- .1 Section 07 92 00 – Joint Sealers.

**1.2 REFERENCES**

- .1 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-51.33-M89, Vapour Barrier Sheet, Excluding Polyethylene, for Use in Building Construction.
  - .2 CAN/CGSB-51.34-M86, Vapour Barrier, Polyethylene Sheet, for Use in Building Construction.

**1.3 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00.
- .2 Product Data:
  - .1 Submit manufacturer's printed product literature, specifications and datasheet and include:
    - .1 Product characteristics.
    - .2 Performance criteria.
    - .3 Limitations.
- .3 Quality assurance submittals:
  - .1 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
  - .2 Instructions: submit manufacturer's installation instructions and comply with written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

**1.4 QUALITY ASSURANCE**

- .1 Health and Safety Requirements: do construction occupational health and safety in accordance with Section 01 35 29.06.
- .2 Mock-Ups:
  - .1 Submit mock-ups in accordance with Section 01 45 00.
  - .2 Construct mock-up of sheet vapour barrier installation including one lap joint, one inside corner and at one electrical box. Mock-up may be part of finished work.
  - .3 Mock-up will be used to judge workmanship, substrate preparation, and material application.
  - .4 Locate where directed by Consultant.

- .5 Allow 48 hours for inspection of mock-up by Consultant.
- .3 When accepted, mock-up will demonstrate minimum standard of quality required for this work. Approved mock-up may remain as part of finished work, however, is to remain uncovered by subsequent work until necessary.

## **Part 2 PRODUCTS**

### **2.1 SHEET VAPOUR BARRIER**

- .1 Polyethylene film: to CAN/CGSB-51.34, 6 mil.

### **2.2 SHEET AIR/VAPOUR BARRIER**

- .1 Self-adhered air/vapour barrier membrane: To CSA A123.22, self-adhering membrane consisting of SBS rubberized asphalt compound laminated to a polyethylene film. Minimum thickness 1 mm.
  - .1 Standard of acceptance:
    - .1 Blueskin SA by Henry Bakor.
    - .2 GoldShield by IKO.
    - .3 Soprastick 1100 by Soprema.
    - .4 Vapour Barrier SA by Johns Manville.
    - .5 Or accepted alternate.
  - .2 Membrane through-wall flashings 1 mm (40 mil) total thickness, self-adhesive, cold applied tape, consisting of 0.8 mm (32 mils), of rubberized asphalt integrally bonded to a 0.2 mm (8 mil) high density, cross-laminated polyethylene film. The rolls are interwound with disposable silicone-coated release sheet.
    - .1 Standard of acceptance:
      - .1 FR 40 by Lexcor.
      - .2 Perma Barrier Wall Flashing by Grace Construction Products.
      - .3 Blueskin TWF.
      - .4 Sopra-Seal Stick 1100 by Soprema.
      - .5 Air Shield by W.R. Meadows.
      - .6 Or accepted alternate.
    - .2 Ensure compatibility of membrane flashing with air/vapour barrier membrane.

### **2.3 ADHESIVE AND PRIMERS**

- .1 Adhesives, termination sealant and primers for self-adhering membrane shall be compatible with selected membrane product as recommended by membrane manufacturer and to suit substrate.

**Part 3 EXECUTION**

**3.1 INSTALLATION**

- .1 Ensure services are installed and inspected prior to installation of retarder.
- .2 Install sheet vapour retarder where indicated to form continuous retarder.
- .3 Use sheets of largest practical size to minimize joints.
- .4 Inspect for continuity. Repair punctures and tears with sealing tape before work is concealed.

**3.2 EXTERIOR SURFACE OPENINGS**

- .1 Cut sheet vapour retarder to form openings and ensure material is lapped and sealed to frame.

**3.3 PERIMETER SEALS**

- .1 Seal perimeter of sheet vapour barrier as follows:
  - .1 Apply continuous bead of sealant to substrate at perimeter of sheets.
  - .2 Lap sheet over sealant and press into sealant bead.
  - .3 Install staples through lapped sheets at sealant bead into wood substrate.
  - .4 Ensure that no gaps exist in sealant bead. Smooth out folds and ripples occurring in sheet over sealant.

**3.4 LAP JOINT SEALS**

- .1 Seal lap joints of sheet vapour barrier as follows:
  - .1 Attach first sheet to substrate.
  - .2 Apply continuous bead of sealant over solid backing at joint.
  - .3 Lap adjoining sheet minimum 150 mm and press into sealant bead.
  - .4 Install staples through lapped sheets at sealant bead into wood substrate.
  - .5 Ensure that no gaps exist in sealant bead. Smooth out folds and ripples occurring in sheet over sealant.

**3.5 CLEANING**

- .1 Proceed in accordance with Section 01 74 11 - Cleaning.
- .2 Upon completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

**END OF SECTION**



**Part 1 General**

**1.1 RELATED SECTIONS**

- .1 Section 06 10 53 – Miscellaneous Rough Carpentry
- .2 Section 07 52 00 – Modified Bituminous Membrane Roofing.
- .3 Section 07 62 00 – Sheet Metal Flashing and Trim.
- .4 Section 07 92 00 – Joint Sealants.

**1.2 REFERENCES**

- .1 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-37.4-M89, Fibrated, Cutback Asphalt, Lap Cement for Asphalt Roofing.
  - .2 CAN/CGSB-37.5-M89, Cutback Asphalt Plastic Cement.
- .2 Canadian Roofing Contractors' Association (CRCA)
  - .1 CRCA Roofing Specification Manual - 1997.
- .3 CSA International
  - .1 CSA A123.5-16 (R2020), Asphalt Shingles Made From Glass Felt and Surfaced with Mineral Granules.
  - .2 CSA A123.22-08 (R2023), Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
  - .3 CAN3-A123.51-14 (R2023), Asphalt Shingle Application on Roof Slopes 1:6 and Steeper.
  - .4 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.
- .4 Health Canada/Workplace Hazardous Materials Information System (WHMIS 2015)
  - .1 Safety Data Sheets (SDS).
- .5 Underwriters Laboratories of Canada (ULC)
  - .1 CAN/ULC-S702.2-15, Standard for Mineral Fibre Thermal Insulation for Buildings.

**ACTION AND INFORMATIONAL SUBMITTALS**

- .6 Product data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for asphalt shingles and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Submit proof of manufacturer's CCMC listing and listing number.
  - .3 Manufacturer's Instructions: to indicate special handling criteria, installation sequence, cleaning procedures and storage.

- .4 Submit 2 copies of WHMIS 2015 SDS.
- .7 Samples:
  - .1 Submit duplicate samples of full-size specified shingles.

### **1.3 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Delivery and acceptance requirements: Deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and handling requirements:
  - .1 Store materials off ground, in dry location, and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Remove only in quantities required for same day use.
  - .3 Store and protect asphalt shingles from nicks, scratches, and blemishes.
  - .4 Replace defective or damaged materials with new.

### **1.4 EXAMINATION**

- .1 Before proceeding with roofing application, ensure that:
  - .1 Photographic documentation of existing condition including heritage elements has been completed.
  - .2 All surfaces are clean and free of debris, snow, frost and moisture.
  - .3 The deck is clean and sufficiently dry to ensure specified adhesion will be obtained.
  - .4 Adjacent construction and installation of related work incorporated with the roof are complete.
  - .5 Roof deck is sound, existing fasteners are tight, and irregularities are corrected to provide a suitable surface for new roofing.
- .2 Ensure substrate is smooth. Remove sharp edges or protrusions that could impair the function of the roof assembly.
- .3 Inform Owner/Consultant in writing of any defects.

### **1.5 EXTRA STOCK MATERIALS**

- .1 All unused shingles remain property of the Owner.

## **Part 2 Products**

### **2.1 MATERIALS**

- .1 Fibreglass asphalt shingles: To CSA A123.5

- .1 Type: self-sealing, glass fiber mat base, ceramically colored/UV resistant mineral surface granules across entire face of shingle; algae-resistant, two piece laminated architectural shingle.
- .2 Colour: As selected from manufacturer's standard range by Consultant.
- .3 Acceptable manufacturers:
  - .1 IKO.
  - .2 GAF.
  - .3 CertainTeed.
  - .4 BP.
- .2 Starter Strip:
  - .1 Starter strip shall consist of a 3-tab shingle placed upside down, with self-adhering strip placed along the leading edge and tabs removed.
- .3 Underlayment:
  - .1 Synthetic underlayment, made of spun-bonded polypropylene, vapour permeable.
    - .1 Standard of acceptance:
      - .1 Rhinorooft U20 synthetic underlayment.
      - .2 Rex Synfelt.
      - .3 Or accepted alternate.
- .4 Asphaltic cement:
  - .1 Plastic cement: To CAN/CGSB-37.5.
  - .2 Lap cement: To CAN/CGSB-37.4.
- .5 Nails: To CSA B111, of galvanized steel, sufficient length to penetrate 19 mm into deck.
- .6 Eave protection membrane: To CSA A123.22, modified bitumen based, self-adhering, minimum thickness 1 mm.
  - .1 Standard of acceptance:
    - .1 Ice & Water Shield by W.R. Grace.
    - .2 Goldseal by IKO.
    - .3 Or accepted alternate.

## **2.2 STATIC VENTS**

- .1 Dual baffle with seamless collar and base construction, complete with insect screen. Size minimum 350 mm x 350 mm.
  - .1 Standard of acceptance:
    - .1 Ventilation Maximum, model 301.
    - .2 Or accepted alternate.

## **2.3 FASTENERS**

- .1 Nails, spikes and staples: To CSA B111.

- .2 Nails and staples to be long enough to penetrate decking a minimum of 19 mm.

## **2.4 ACCESSORIES**

- .1 Metal closure: 0.56 mm (26 gauge) galvanized steel unless otherwise shown or specified.
- .2 Semi-rigid mineral wool insulation: Semi-rigid glass fibre, Type 1, preformed, unfaced; rockwool, or slagwool boards, to CAN/ULC 702.2.

## **Part 3 Execution**

### **3.1 REMOVAL OF EXISTING ROOFING**

- .1 Remove existing roofing, flashings and underlay, and expose roof sheathing.
- .2 Withdraw existing shingle and flashing nails. Set those which break off flush with wood deck. Leave surfaces free from dirt and loose material.
- .3 Remove portions of sheathing affected by fungal or insect attack as directed on site by Consultant.
- .4 Replace cut out portions of sheathing with sheathing of equal sectional dimensions, and specified grade. Seat each end on rafter, with 25 mm bearing, and secure to rafter. Use H-clips at 600 mm c/c to support plywood edges.
- .5 Remove all metal flashing, step flashing and plumbing vents flashing as per specification. Retain for re-use only where indicated.
- .6 Remove all existing static vents as per specification.
- .7 Remove all exhaust vents, carefully detaching interior ducts and ensure ducts are adequately anchored to substrate.

### **3.2 EXAMINATION**

- .1 Verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for asphalt shingles installation in accordance with manufacturer's written instructions.
  - .1 Visually review substrate in presence of Consultant.
  - .2 Inform Consultant of unacceptable conditions immediately upon discovery.
  - .3 Proceed with installation only after unacceptable conditions have been remedied.

### **3.3 EAVES PROTECTION AND UNDERLAYMENT APPLICATION**

- .1 Install 1 ply self-adhering waterproof membrane to all eaves extending 1.8m up slope and all valleys 1.8m wide and at the transition of all sloped and vertical surfaces as indicated on detail drawings.

- .2 Membrane shall be laid flat following removal of release paper and be free of wrinkles, buckles and fishmouths. Ensure membrane laps are all sealed with the upper ply lapped over the lower roll width by 75mm and with 150mm end laps.
- .3 Install membrane at all changes in plane to extend 300mm up vertical and 600mm onto sheathing.
- .4 Install two roll widths of membrane at all valleys, centred on middle of valley.
- .5 Install underlayment sheeting to all other sheathing surfaces, ensuring all laps are in direction of drainage plane. Nail in place until shingle application commences. Do not allow underlayment to provide overnight waterproof protection without receiving permission from Owner.

### **3.4 SHINGLE APPLICATION**

- .1 Do asphalt shingle work to CAN3-A123.51 and CRCA Specification except where specified otherwise.
- .2 Nailing and staples: All fasteners shall be driven straight to achieve a flush finish. Where fasteners are under driven, the contractor shall return and correct by hand nailing. Where fasteners are over driven or installed crookedly, the contractor shall be requested to return and replace the affected shingles.
- .3 Install drip edge metal flashing along eaves, overhanging 12 mm, with minimum 100 mm flange extending onto roof decking. Nail to deck at 300 mm on centre.
- .4 Install step flashing interweaved between shingles at vertical junctions. Install metal step flashing, extending 100 mm up vertical face and 100mm out onto deck. Provide a minimum headlap of 75 mm for each step flashing. Install shingles over flange of the step flashings. Terminate shingles flush with vertical face.
- .5 Install asphalt shingles on roof slopes 1:6 and steeper in accordance with CAN3-A123.51.
- .6 Install a starter strip at the eave, rakes and valleys and extend 13mm beyond eave and rake edges. Nails should be installed in a parallel line to base of roof. Nails should be arranged so as not to be left exposed by the cut outs or spaces between shingles tabs. Install starter strip so that self-adhering strip is located at the extreme edge of the roof and faces upward.
- .7 Install the first course of shingles starting with a full shingle overhanging the eave and rake edges by 19 mm.
- .8 Install a minimum of 4 nails per shingle, located as indicated on the shingle packaging. For high wind areas or in cool temperatures, or on slopes of 21:12 (60°) or more, use 6 nails per shingle placed as shown below. Ensure that no nail is within 50 mm of a joint/cutout of the underlying shingle. Seal down each shingle at time of application with three 25 mm diameter spots of roofing cement placed under the shingle 50 mm above the bottom edge and equally spaced along the shingle. Use roofing cement sparingly, as excessive amounts may cause blistering.

- .9 Install the second course of shingles by cutting half the tab off the first shingle. Then alternate this with a full shingle for succeeding course.
- .10 For Architectural Laminated Shingles: Follow manufacturer's specific application requirements for the selected shingle. Generally, this will include trimming off 250 mm, 500 mm and 750 mm respectively, from the left end of the starting shingle and apply to overhang rake edge by 7 mm to 19 mm. Continue each course across the roof with full shingles butting ends loosely. Align the bottom edge of the shingles with the tops of the saw teeth of the shingles in the underlying course. Note: Other offsets between 150 mm – 250 mm may be used. Repeat the sequence of the first four courses up the roof.
- .11 Apply shingles so as to avoid colour blending problems.
- .12 Hip and Ridge Shingles: The contractor shall install precut shingles unless the manufacturer does not fabricate this product. Pre-cut Hip and Ridge products bend each piece over the hip or ridge, and nail per instructions on the wrapper. The final shingle should be set in roofing cement and the exposed nail heads of this shingle should be covered with roofing cement. Prior to application in cold weather, store hip and ridge shingles in a heated area to allow for easier bending.
- .13 In high wind areas: Starter strip shingles must be used at all eaves and rakes. The shingles must be installed with additional nails as specified and they must have an opportunity to seal or be manually sealed as described. Manual sealing in addition to 6 nails is required.

### **3.5 STATIC VENTS**

- .1 Install vents in strict accordance with manufacturers printed instructions. Ensure vent openings are cut to allow maximum air flow and as close to the ridge as possible and at consistent spacing and elevation relative to adjacent vents.

### **3.6 VENT INSTALLATION**

- .1 At vent locations, ensure vent opening is cut to match size of vent and does not restrict airflow. Brace openings as required to ensure a suitable substrate for vent unit.
- .2 Where new vents are required with new openings, locate close to ridge or roof high point and space evenly at a consistent elevation.
- .3 Install vent flange to sit on shingles below openings and nail to substrate on top and sides. Shingles shall terminate at sides of vent, leaving approximately 25mm clearance around upstand.
- .4 Close in all redundant openings with lumber supports between trusses and plywood sheathing to fully protect former opening.

### **3.7 CLEANING**

- .1 Progress Cleaning:

- .1 Leave Work area clean at end of each day.
- .2 Sweep ground areas with a drag magnet at regular intervals to ensure all nails are removed.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.
- .3 Waste Management: separate waste materials for reuse or recycling.
  - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.
- .4 Proceed in accordance with Section 01 74 11 - Cleaning.

**3.8 PROTECTION**

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by asphalt shingles installation.

**END OF SECTION**



**Part 1 General**

**1.1 RELATED SECTIONS**

- .1 Section 06 10 53 – Miscellaneous Rough Carpentry.
- .2 Section 07 31 13 – Asphalt Shingles
- .3 Section 07 62 00 – Sheet Metal Flashing and Trim.
- .4 Section 07 72 33 – Roof Hatches.
- .5 Section 07 92 00 – Joint Sealants.

**1.2 REFERENCES**

- .1 American Society for Testing and Materials International, (ASTM)
  - .1 ASTM A653/A653M-15, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  - .2 ASTM D1761-20, Standard Test Methods for Mechanical Fasteners in Wood and Wood-Based Materials.
- Canadian Standards Association (CSA International)
  - .3 CAN/CSA-A123.4-04 (R2013) - Asphalt for Constructing Built-Up Roof Coverings and Waterproofing Systems.
  - .4 CSA A123.22-08(r2013), Self-Adhering Polymer Modified Bituminous Membrane Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
  - .5 CSA A123.23-15 - Product specification for polymer-modified bitumen sheet, prefabricated and reinforced.
  - .6 CSA A231.1-14/A231.2-14, Precast Concrete Paving Slabs / Precast Concrete Pavers.
  - .7 CSA B272-93 (R2000), Prefabricated Self-Sealing Roof Vent Flashings.
- .2 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-1.108-M89, Bituminous Solvent Type Paint.
  - .2 CAN/CGSB-37.5-M89, Cutback Asphalt Plastic Cement.
  - .3 CAN/CGSB-51.33-M89, Vapour Barrier Sheet, Excluding Polyethylene, for Use in Building Construction.
- .3 Factory Mutual (FM Global)
  - .1 Hot Work Permit Form F2630.
- .4 Underwriters Laboratories' of Canada (ULC)
  - .1 CAN/ULC-S107-10, Standard Methods of Fire Tests of Roof Coverings.
  - .2 CAN/ULC-S126-06, Standard Method for Test for Fire Spread Under Roof Deck Assemblies.

- .3 CAN/ULC-S702.2-03, Standard for Mineral Fibre Thermal Insulation for Buildings.

### **1.3 ADMINISTRATIVE REQUIREMENTS**

- .1 Convene pre-installation meeting one week prior to beginning roofing Work, with roofing contractor's representative and Consultant to:
  - .1 Verify project requirements.
  - .2 Review installation and substrate conditions.
  - .3 Co-ordination with other building subtrades.
  - .4 Review manufacturer's installation instructions and warranty requirements.

### **1.4 COORDINATION**

- .1 Coordinate work of this Section with related work specified in other Sections to ensure construction schedule is maintained and water tightness and protection of the building and finished work is maintained at all times.

### **1.5 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 System summary:
  - .1 Provide a one page synopsis of each roof type that lists the assembly components in order from top to bottom.
- .3 Product Data:
  - .1 Provide two copies or an electronic copy of most recent technical roofing components data sheets describing materials' physical properties and include product characteristics, performance criteria, physical size, finish and limitations for all products to be incorporated in the new system.
  - .2 Provide two copies or an electronic copy of WHMIS 2015 Safety Data Sheets to Consultant for:
    - .1 Primers.
    - .2 Sealers.
    - .3 Liquid membrane.
    - .4 Adhesives.
- .4 Provide shop drawings:
  - .1 Provide shop drawing or submittal indicating adhesive pattern specified by adhesive manufacturer for the required wind uplift pressures indicated on the Drawings.
- .5 Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

## **1.6 QUALITY ASSURANCE**

- .1 Installer qualifications: Company or person specializing in application of modified bituminous roofing systems with 5 years documented experience, approved by manufacturer. Installer to be members of Roofing Contractors Association of Nova Scotia (RCANS) and/or Canadian Roofing Contractors' Association (CRCA) in good standing.
- .2 Only certified applicators are permitted to use hot-air welding equipment.
- .3 Hold a pre-installation meeting prior to the start of roofing works, with the roofing contractor's representative and the Consultant, to review installation conditions particular to this project.
- .4 Roof membrane manufacturer shall delegate a representative to visit the work site at the start of roofing installation. Contractor shall engage membrane manufacturer's technical representative as required to provide technical guidance for and inspection of membrane application. The Contractor shall at all times enable and facilitate access to the worksite by this representative.

## **1.7 FIELD QUALITY CONTROL**

- .1 Water Testing:
  - .1 In the event the Consultant deems any of the Work to be deficient, provide water test of all flashing, projections, equipment on roof and roofing system. Co-ordinate test with the Owner's operations personnel.
  - .2 Contractor is to assume all costs of testing and correction.
- .2 Adhesion Testing:
  - .1 At each roof drainage area following installation of membrane base sheet, carry out adhesion tests to confirm adhesion of membrane to substrate and substrate layers to each other, down to first mechanically attached layer.
  - .2 Locations and timing of tests will be directed by Consultant. Provide labour and materials as required to assist Consultant in conducting tests.
  - .3 If inadequate adhesion is found, conduct further testing to determine the extent of the inadequate adhesion. Replace all defective areas to the satisfaction of the Consultant. Replace substrate materials as necessary with new materials, and patch cut tests with membrane patches extending at least 150 mm beyond the cut.
  - .4 Contractor is to assume all costs of testing and correction.
- .3 Sample Testing:
  - .1 At each roof drainage area following installation of membrane base sheet, carry out sample tests to confirm materials and installation of roof assembly components. Sample size to be 300 mm x 300 mm.
  - .2 Locations and timing of tests will be directed by Consultant.
  - .3 If inadequate construction is found, conduct further testing to determine the extent of the inadequate adhesion. Replace all defective areas to the

satisfaction of the Consultant. Replace substrate materials as necessary with new materials, and patch cut tests with membrane patches extending at least 150 mm beyond the cut.

- .4 Contractor is to assume all costs of testing and correction.

## **1.8 FIRE PROTECTION**

- .1 Fire Extinguishers:
  - .1 Pressure rechargeable type with hose and shut-off nozzle,
  - .2 ULC labeled for ABC class protection.
  - .3 ULC labeled for A class protection, for wood, paper and fibreboard.
  - .4 Size 14 kg.
  - .5 Have one fully charged ABC extinguisher, and one fully charged Type A extinguisher on roof per torch applicator, within 3 m of the propane source.
- .2 Maintain fire watch for 2 hours after each day's torching operations cease.

## **1.9 GENERAL REQUIREMENTS**

- .1 Comply with the General Requirements, General Instructions and Supplementary Conditions.
- .2 Execute work in accordance with this Section and other related Sections, Drawings and Details.
- .3 Attach roofing to structure to meet requirements of insurance underwriter and authorities having jurisdiction.
- .4 Regard manufacturer's printed recommendations as minimum requirement for materials, methods and workmanship not otherwise specified.
- .5 Contact the Consultant if the specifications conflict with the manufacturer's recommendations. Otherwise it will be assumed that the Contractor and manufacturer are in agreement with procedures outlined.
- .6 Advise the Consultant of adjustments to specified roofing procedures caused by weather and site conditions. Make adjustment to specified procedures only after review with the Consultant.
- .7 Maintain equipment in good working order to ensure control of roofing operations and protection of work. Types of roofing equipment and laying techniques to be employed are to meet the approval of the Consultant.
- .8 Do not penetrate roof deck with excess fastening devices that would do damage or impair the function of the assembly.

**1.10 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Safety: Comply with requirements of Workplace Hazardous Materials Information System (WHMIS 2015) regarding use, handling, storage, and disposal of, sealing compounds, primers and caulking materials.
- .3 Manufacturer's recommendations for handling and storing products are to be considered a minimum requirement.
- .4 Materials shall be delivered to the site, undamaged and in their original packages, with manufacturer's labels visible, attesting to their conformity to specific standards.
- .5 Ensure that shelf life of materials has not expired.
- .6 Remove damaged material from site and replace all rejected materials with new product.
- .7 Elevate on raised platform and store as to prevent deformation of materials.
- .8 Provide and maintain dry, off-ground weatherproof storage.
- .9 Store rolls of membrane in upright position. Store membrane rolls with selvage edge up.
- .10 Remove only in quantities required for same day use.
- .11 Place plywood runways over completed Work and over areas not in Contract, as required, to enable movement of material and other traffic.
- .12 Store sealants at +5°C minimum or according to manufacturers requirements.
- .13 Protect insulation by slitting manufacturer's packaging and installing a waterproof UV-resistant tarp.
- .14 Handle roofing materials in accordance with manufacturer's written directives, to prevent damage or loss of performance.
- .15 Avoid stockpiling of materials or use of equipment on decks in a way which could cause overloading.

**1.11 ENVIRONMENTAL REQUIREMENTS**

- .1 Ensure protection of products that are sensitive to damage by moisture. Do not work during rain, snow or fog. Stop work and make watertight before the onset of inclement weather or when weather appears imminent.

- .2 Ensure protection of the building from weather at all times. If inclement weather is forecast or appears imminent, postpone work that would risk the building from moisture damage.
- .3 If it becomes apparent that work would threaten the building watertightness, the Owner has the right to stop work. Any additional expenses due to work stoppage or postponement of work will be at the Contractor's expense.
- .4 Ambient Conditions
  - .1 Do not install roofing when ambient temperature remains below -5°C or according to manufacturers requirements.
- .5 Install roofing on dry deck, free of snow and ice, use only dry materials and apply only during weather that will not introduce moisture into roofing system.

#### **1.12 COMPATIBILITY**

- .1 Compatibility between materials is essential. Use only materials that are known to be compatible when incorporated in a complete assembly. Provide written declaration to Consultant stating that materials and components, as assembled in system, meet this requirement.
- .2 Defective work resulting from work with incompatible materials will be considered the responsibility of the Contractor.
- .3 Repair all work that could result in damage or interfere with performance.

#### **1.13 EXISTING SUBSTRATES**

- .1 Following removal of existing material to the substrate, inspect the deck for soundness and notify the Consultant of any deck found unsound and not suitable for roofing. Do not commence work until conditions are documented and the Consultant rules on the acceptability of surfaces and/or corrective measures required. The cost of any delays due to postponement of work that results from investigating the site problem or obtaining a ruling will be at the Owner's expense.
- .2 Verify the compatibility of new materials (i.e. adhesives, primers, pressure sensitive materials, etc.) with existing components remaining in place.
- .3 The commencement of work is proof that the Contractor has accepted surfaces as satisfactory and accepts responsibility for appearance and performance of completed work.
- .4 Defective work resulting from application of material on unsatisfactory surfaces will be considered the responsibility of the Contractor.
- .5 The Contractor will be responsible for all repairs, costs and pay all cost and fees required to rectify damage or defective work. Use materials and finish to match the original preconstruction conditions.

**1.14 DAILY OPERATIONS**

- .1 Unless otherwise specified, complete the entire roofing operation up to line of termination of each day's work, as required by design intent, in order to safeguard and protect the work and building from damage and weather.

**1.15 EXAMINATION**

- .1 Before proceeding with roofing application, ensure that:
  - .1 Photographic documentation of existing condition including heritage elements has been completed.
  - .2 All surfaces are clean and free of debris, snow, frost and moisture.
  - .3 The deck is clean and sufficiently dry to ensure specified adhesion will be obtained.
  - .4 Adjacent construction and installation of related work (i.e. curbs, drains, penetrations, wood nailers, etc.) incorporated with the roof are complete.
  - .5 Roof deck is sound, existing fasteners are tight and irregularities are corrected to provide a suitable surface for new roofing.
- .2 Ensure substrate is smooth. Remove sharp edges or protrusions that could impair the function of the roof assembly.
- .3 Inform Owner/Consultant in writing of any defects.

**1.16 DRAINS AND DRAINAGE PLANE**

- .1 Inspect surfaces and ensure that roof deck is level or sloped to drain in conforming to design intent.
- .2 Take spot levels to verify that pools of water in excess of 13 mm depth will not form.
- .3 Tabulate levels and submit to Consultant.

**1.17 EXAMINE UNDERSIDE OF DECK**

- .1 Inspect the underside of deck to ensure fasteners will not damage the structure, affect interior surfaces or electrical and mechanical services.

**1.18 HIDDEN SERVICES**

- .1 Investigate the location of all known hidden services by reviewing interior conditions, plans, specifications and drawings for the original building, any subsequent alterations, completion of cut tests and interviewing those involved in the construction and maintenance of building services. These services include but are not limited to mechanical, electrical, cable, communication, computer, security or roof assembly. Ensure all services are located and will be protected from damage under the Contract. In some cases, services may be located over the roof deck and within the roof assembly. Notify Owner/Consultant in such occurrence and proceed with installation as directed.

**1.19 EQUIPMENT**

- .1 Inspect equipment affected by the work, including but not limited to rooftop equipment, curbs, existing drains and plumbing, mechanical, electrical and lightening protection services, to ensure they are in good repair and working order. Record any damage and advise the Consultant.
- .2 During re-roofing, ensure that all mechanical equipment, ducts, pipes, etc. are properly supported.
- .3 Notify Owner and/or Consultant of any equipment which is not operational or damaged prior to the commencement of work.

**1.20 ADVISE CONSULTANT**

- .1 Advise the Consultant of any unusual circumstances affecting the work. Notify the Consultant of any defective or malfunctioning equipment or drainage deficiencies. Do not commence work until defects and incorrect levels have been verified and rectified.

**1.21 PROTECTION OF ROOFTOP EQUIPMENT**

- .1 Remove any equipment and flashing intended for re-use and save from harm. Store in approved location and reset at project conclusion unless specified or shown to be removed.
- .2 Protect all openings, vents and stacks from weather and contamination from debris.

**1.22 SERVICES**

- .1 Services are to be left operational unless otherwise authorized by the Owner.
- .2 Unless otherwise specified, the Contractor will be responsible for disconnection, relocation, re-installation and extending all services required to facilitate work under this Contract. Co-ordinate work with the Owner and provide minimum of 48 hours notification if services are to be interrupted.
- .3 Contractor to verify location of services prior to commencement of work. Notify Owner/Consultant of any unusual conditions.
- .4 The Contractor and their employees must hold valid certificates for the work undertaken.
- .5 Complete work of this Section as required by local authorities having jurisdiction. Have work inspected and pay all fees relative to such inspection to ensure work meets with published standards and codes.
- .6 Submit Certificate or Letter of Approval by authority responsible for the work to the Owner and Consultant with final documentation.

- .7 All fans, air handling units, and any electrical equipment affected by the replacement of the roof sections under this Section, whether disconnected or extended must be inspected by an ESA representative to verify the integrity of the existing wiring and/or the new installation.

## **Part 2 Products**

### **2.1 GENERAL**

- .1 All standards, regulations and specifications listed herein are considered to be the latest available edition.
- .2 All components must be part of a tested assembly in accordance with CSA 123.21.

### **2.2 PRIMERS**

- .1 Self-adhesive (pressure-sensitive) membrane primer. As recommended by membrane manufacturer. Use low VOC, polymer emulsion-based primer, unless directed otherwise by Consultant on site.
  - .1 As recommended by membrane manufacturer:
    - .1 Mod-Bit Primer by IKO.
    - .2 Elastocol series by Soprema.
    - .3 Or accepted alternate.

### **2.3 ROOF MEMBRANE AND MEMBRANE FLASHINGS**

- .1 Acceptable membrane manufacturers:
  - .1 Soprema.
  - .2 IKO Industries Ltd.
  - .3 Or accepted alternate.
- .2 Composite panel base sheet membrane:
  - .1 For applications over wood deck: Composite panel base sheet membrane. 180g/m<sup>2</sup> styrene-butadiene-styrene (SBS) elastomeric polymer polyester membrane factory laminated to 4.8 mm thick glass matt faced asphaltic core coverboard panel.
    - .1 Membrane:
      - .1 Type B
      - .2 Grade 3
    - .2 Top surfaces:
      - .1 Sanded
    - .3 Standard of Acceptance
      - .1 Protectobase 180 by IKO
      - .2 2-1 Soprasmart Board by Soprema
      - .3 Or accepted alternate

- .3 Composite panel base sheet membrane end lap cover strip: To CSA A123.23-15.
  - .1 Styrene-butadiene-styrene (SBS) elastomeric polymer polyester or composite polyester/fibreglass reinforcement
  - .2 Width 330 mm
  - .3 Type C.
  - .4 Grade 3.
  - .5 Top and bottom surfaces:
    - .1 Sanded/pressure sensitive.
  - .6 Standard of Acceptance
    - .1 IKO Torchflex TP-180-FF-Base cut to width
    - .2 Soprema Sopralap
    - .3 Or accepted alternate
- .4 Cold-Applied/Adhered base sheet membrane flashing, fire seal membrane (combustible substrates): To CSA A123.23, 2.5 mm minimum thickness.
  - .1 Styrene-butadiene-styrene (SBS) elastomeric polymer prefabricated sheet, polyester or composite polyester and glass reinforcement.
  - .2 Type B or C.
  - .3 Grade 1, 2 or 3
  - .4 Top and bottom surfaces:
    - .1 Sanded
  - .5 Standard of acceptance
    - .1 Modiflex MP-180-SS-Base by IKO
    - .2 COLDPLY BASE 410 by Soprema
    - .3 Or accepted alternate
- .5 Cold-Applied cap sheet membrane and cap sheet membrane flashings:
  - .1 High-performance cap sheet styrene-butadiene-styrene (SBS) with 250 gm polyester reinforcement or composite reinforcement membrane.
  - .2 Thickness: 3.5 mm (138 mil)
  - .3 Weight: 4.1 kg/m<sup>2</sup>
  - .4 Selvedge Width: 90 mm
  - .5 Bottom surfaces:
    - .1 Sanded.
  - .6 Top surfaces:
    - .1 Coloured granules.
  - .7 Standard of acceptance:
    - .1 Modiflex MP-250-Cap by IKO
    - .2 Colply Traffic Cap 460 by Soprema
    - .3 Or accepted alternate.
- .6 Self-Adhered Membrane

- .1 To CSA A123.22, self-adhering membrane consisting of SBS rubberized asphalt compound laminated to a polyethelene film. Minimum thickness 1 mm.
  - .1 Standard of acceptance:
    - .1 Blueskin SA by Henry Bakor.
    - .2 GoldShield by IKO.
    - .3 Soprastick 1100 by Soprema.
    - .4 Or accepted alternate.
- .7 Fireguard tape:
  - .1 Modified bituminous membrane supplied in strips, 150 mm wide, 1.6 mm thick, glass fleece reinforced with self-adhesive underside.
  - .2 Provided by membrane manufacturer.

## **2.4 MEMBRANE ADHESIVE**

- .1 Membrane Adhesive
  - .1 Two-component, odourless polyurethane adhesive used to adhere SBS polymer modified bitumen membranes on low slope surfaces.
    - .1 Standard of acceptance:
      - .1 Millennium by IKO
      - .2 Duotack by Soprema.
      - .3 Or accepted alternate.

## **2.5 LIQUID MEMBRANE**

- .1 Two-component methacrylate or one component polyurethane/bitumen resin, solid content 80% or greater, compatible with roof membrane.
  - .1 Standard of acceptance:
    - .1 Alsan Flashing by Soprema.
    - .2 MS Detail by IKO.
    - .3 Or accepted alternate.
- .2 Reinforcement mesh: As recommended by liquid membrane manufacturer.

## **2.6 ADHESIVES**

- .1 Adhesive for securing overlay board and insulation: To be fully compatible with all materials in the roofing assembly. Applicability of use to adhere the different materials in the roofing assembly to be included in the manufacturer's literature.
  - .1 Standard of acceptance:
    - .1 Millenium by IKO.
    - .2 Duotack by Soprema.
    - .3 Fas-n-free by Tremco.
    - .4 Insta-Stick by Instafoam Inc.
    - .5 Roof Assembly Adhesive by Chemlink.

- .6 Olybond 500 by OMG.
- .7 Or accepted alternate.

## **2.7 SEALERS**

- .1 Plastic cement: Asphalt, to CAN/CGSB-37.5.
- .2 For sealants, mastic, adhesives or caulk, refer to Section 07 92 00 – Joint Sealants.

## **2.8 MEMBRANE FASTENING BAR**

- .1 Galvanized sheet steel or extruded aluminum, thickness 1 mm (20 ga.), 38 mm width, supplied in minimum 2.4 m lengths, with pre-drilled 2 mm holes, secured with #14 stainless steel screws @ 150 mm c/c.

## **2.9 FASTENERS**

- .1 Fasteners for exposed metal flashing and cladding to wood or steel: Minimum 38 mm #10 cadmium plated hex head screws, colour matched, with neoprene and steel washers.
- .2 Fasteners to concrete/brick: Corrosion resistant purpose-made pre-drill, self-tapping concrete screws, minimum 4.78 mm diameter, minimum 25 mm penetration into concrete.
  - .1 Standard of acceptance:
    - .1 Tapcon.
    - .2 Or accepted alternate.
- .3 Fasteners for sheet metal and wood to wood: Corrosion resistant #10 wood screws or nails to suit application.
- .4 Structural fasteners into wood: Lag screws, 12.7 mm diameter hot dipped galvanized steel, length 125 mm.

## **2.10 STATIC VENTS**

- .1 Dual baffle with seamless collar and base construction, complete with insect screen. Size minimum 350 mm x 350 mm.
  - .1 Standard of acceptance:
    - .1 Ventilation Maximum, model 301.
    - .2 Or accepted alternate.

## **2.11 PLUMBING VENTS**

- .1 2-piece spun aluminum with integral flange, diameter to suit existing pipe size, equipped with vandal proof cap.
  - .1 Standard of acceptance:
    - .1 EVF-2 by Thaler.

- .2 Flash-tite by Lexcor.
- .3 SJ-31 Vandal Proof Stack Jack by Thaler.
- .4 Or accepted alternate.

## **2.12 B-VENT BASE FLASHING AND STORM COLLAR**

- .1 Rain collar to be shop fabricated from 0.61 mm (24 ga.) galvanized sheet, to be same material as base flashing, 100 mm girth, with integral tightening clamp.

## **2.13 ROOF ACCESSORIES**

- .1 Deck closure, for openings per drawings: 19 mm plywood in accordance with Section 06 10 53 – Miscellaneous Rough Carpentry. Size to suit opening.
- .2 Bituminous metal paint: To isolate metal from concrete and masonry surfaces, to CAN/CGSB-1.108-M89 Type II.
  - .1 Standard of acceptance:
    - .1 810-07 by Henry Inc.
    - .2 Or accepted alternate.
- .3 Semi-rigid mineral wool insulation: Semi-rigid glass fibre, Type 1, preformed, unfaced; rockwool, or slagwool boards, to CAN/ULC 702.2.

## **2.14 ROOF HATCH**

- .1 See Section 07 72 33 – Roof Hatch.

## **Part 3 Execution**

### **3.1 QUALITY OF WORK**

- .1 Do examination, preparation and roofing Work in accordance with Roofing Manufacturer's Specification Manual and CRCA Roofing Specification Manual.
- .2 Do priming in accordance with manufacturer's written recommendations.
- .3 Fit the interface of all walls and roof assemblies with durable rigid material sheet metal or plywood providing connection point for continuity of air barrier.
- .4 Make assembly, component and material connections in consideration of appropriate design loads, with reversible mechanical attachments.
- .5 In the event that any product contains a manufacturing defect or anomaly, the Contractor shall notify the Consultant and manufacturer immediately and request direction.

### **3.2 REMOVAL OF EXISTING ROOFING**

- .1 Remove all roofing, flashing and insulation materials down to deck. Leave existing blocking and parapet construction in place where indicated. Where a

built-up air/vapour barrier is present, remove this from the deck unless agreement is otherwise obtained from the Consultant to leave in place.

- .2 Remove existing rooftop equipment where indicated.
- .3 Clean and prepare all roof decks according to the specifications and manufacturer's instructions.

### **3.3 EXAMINATION OF ROOF DECKS**

- .1 Verification of Conditions:
  - .1 Inspect with Consultant deck conditions including parapets, construction joints, plumbing vents and ventilation outlets to determine readiness to proceed.
  - .2 Visually inspect all wood roof deck. Resecure wood deck to framing with minimum #10 treated deck screws, 2 screws at each support member penetrating 30mm min. into the support members as necessary.
    - .1 Perform fastener pull-out testing as required.
    - .2 Provide Consultant with photographic log of existing roof deck.
- .2 Evaluation and Assessment:
  - .1 Prior to beginning of work ensure:
    - .1 Decks are firm, straight, smooth, dry, free of snow, ice or frost, and swept clean of dust and debris. Do not use calcium or salt for ice or snow removal.
    - .2 Curbs have been built.
    - .3 Roof drains have been installed at proper elevations relative to finished roof surface.
    - .4 Plywood and lumber nailer plates have been installed to deck, walls and parapets as indicated.
- .3 Do not install roofing materials during rain or snowfall or when such weather is imminent.

### **3.4 AIR SEALS**

- .1 Install 0.56 mm (26 ga.) galvanized or 0.51 mm (26 ga.) pre-finished metal air seal where indicated. Mechanically secure metal to deck and extend as required to allow a minimum 100 mm tie-in with air/vapour barrier membrane. Lap and seal air/vapour barrier membrane onto air-seal.

### **3.5 MECHANICAL EQUIPMENT DISCONNECTION / MODIFICATION / RECONNECTION**

- .1 Perform disconnection, extension, modification, and reconnection of mechanical equipment in accordance with drawings provided. Work shall be performed by a licensed trade sub-contractor. Obtain approval from Consultant prior to making adjustments not scheduled.

- .2 In general, Contractor is responsible for disconnection extension, modification, and reconnection of all operating HVAC equipment in work area. Contractor is responsible for disconnection (at interior) of those mechanical items indicated for removal by Owner.
- .3 All mechanical equipment must be properly tagged out of service (especially where gas is present). ESA certificates are required for all mechanical and electrical reconnections.

### **3.6 PROTECTION OF IN-PLACE CONDITIONS**

- .1 Cover walls, walks and adjacent work where materials hoisted or used.
- .2 Use warning signs and barriers. Maintain in good order until completion of Work.
- .3 Protect roof from traffic and damage. Comply with precautions deemed necessary by Consultant.
- .4 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.
- .5 Metal connectors will be treated with rust proofing or galvanization.
- .6 Fit the interface of the walls and roof assemblies with durable rigid material sheet metal or plywood providing connection point for continuity of air barrier.

### **3.7 PRIMING**

- .1 Unless otherwise indicated or directed by Consultant, prime all surfaces which will be in direct contact with bituminous materials at the rate of 0.15 L/m<sup>2</sup> to manufacturer's recommendations. For self-adhering membrane, install primer at a rate recommended by manufacturer. Ensure that surfaces are tack-free before proceeding.
- .2 "Pre-primed" gypsum products (i.e. DensDeck Prime) are to be considered "primer ready" and are to be field primed with the membrane system manufacturers required product prior to the installation of either self-adhering (pressure sensitive) membrane or torch applied modified bitumen membrane components.
- .3 Ensure that surfaces are tack-free before proceeding.
- .4 Limit quantity of primer at deck openings and points of termination and provide supplemental protection to prevent bleedthrough to the building interior.
- .5 Roll primer into surface.
- .6 Re-prime all surfaces, including pre-primed surfaces, that become contaminated with dust or become marred due to their exposure to roof traffic or weather.

### **3.8 BLOCKING AND CURBS**

- .1 Blocking and curbs are to be constructed as detailed including pressure sensitive membrane air/vapour seals.
- .2 Blocking is to be covered with pressure sensitive fire seal membrane covering all exposed wood surfaces and sealed 100 mm minimum onto the roof vapour retarder membrane. Fire seal membrane is to be installed immediately following the blocking installation to prevent the blocking and encapsulated insulation from being exposed to moisture.

### **3.9 MODIFIED BITUMINOUS MEMBRANE - GENERAL APPLICATION**

- .1 Inspect and seal all substrates to eliminate exposure. Use fireguard tape as required or recommended by manufacturer.
- .2 Mechanical spreaders are not permitted to install modified membranes.
- .3 Use only bitumen, sealants, adhesive or mastics as specified by membrane manufacturer. Provide written approval from manufacturer when proposing any alternatives or substitutions.
- .4 Lay out all sheets as to allow them to relax a minimum of 30 minutes. When temperatures are below 4.4°C keep and lay out rolls in heated storage. Install rolls before temperature fallback of the sheet occurs.
- .5 Roof membrane to be installed in one sheet if possible.
- .6 Lay all membrane starting at low point to ensure that seams do not face water flow. Roll all membrane into place, true to line, free of buckles, air pockets, fishmouths and tears.
- .7 Overlap all end laps minimum 150 mm and side laps 75 mm.
- .8 Offset all side laps between plies by 50%.
- .9 Offset all end laps between plies minimum 1200 mm.
- .10 At valley locations, run membrane continuously with the slope of the main roof. Lay out all sheets to ensure minimum side laps are maintained through valley area and short section of roof beyond. At these locations the side laps for the main roof will increase. Install membrane to details and Consultant's direction onsite.
- .11 Ensure that a watertight seal is achieved at all overlaps and points of termination.
- .12 Carry base sheet flashing over face of building as shown on the drawings.
- .13 Carry membrane up all vertical surfaces to point shown. Cut off corners at 45° at end laps to be covered by the next roll prior to installation of following sheet.
- .14 Seal fasteners through membrane immediately with Type 'A' sealant.

- .15 Verify procedure with Consultant on site.

### **3.10 MEMBRANE APPLICATION**

- .1 In accordance with drawings and details, install new membrane and flashings system.
- .2 Install all membrane in strict accordance with manufacturer's latest printed instructions and application methods.

### **3.11 COMPOSITE PANEL BASE SHEET (MECHANICALLY ATTACHED)**

- .1 Position panels with joints staggered from underlying layers and end laps aligned to facilitate the installation of end lap cover sheets
- .2 Attach panels with mechanical fasteners through the overlay board into the wood deck as required for the approved CSA 123.21 tested assembly and for the roof area and zone being installed.
- .3 Remove protective film from side laps, seal pressure sensitive side lap components and heat seal the remainder of the side laps using equipment and techniques consistent with the membrane system manufacturer's written instructions.
- .4 Prepare end laps and position and install end lap cover strips over all end laps consistent with the manufacturers written instructions for the CSA A123.21 Tested Assembly approved for use on this project.
- .5 Where one additional row of fasteners is required, install modified bitumen cover strip over the additional row of fasteners.
- .6 Where two additional rows of fasteners are required, install second modified bitumen base sheet to cover the fasteners in the field of the membrane. Second base sheet ply shall be offset 305mm +/- from the composite panel base sheet side laps.
- .7 Ensure that a watertight seal of all membrane joints and points of termination is achieved with a torch and trowel.

### **3.12 BASE SHEET (ADHERED APPLICATION)**

- .1 Base sheet application:
  - .1 Starting at low point of roof, perpendicular to slope, unroll base sheet, align and reroll from both ends.
  - .2 Unroll and embed base sheet in adhesive. Roll with weighted roller as per manufacturer's instructions.
  - .3 Ensure rolling is performed from center of sheet outward.
  - .4 Lap sheets 75 mm minimum for side and 150 mm minimum for end laps.
  - .5 Hot air weld to seal outside 50.8 mm for all end and side laps.
  - .6 Application to be free of blisters, wrinkles and fishmouths.

**3.13 BASE SHEET FLASHINGS (ADHERED APPLICATION)**

- .1 All flashings to be cut across the roll in 1 m sections. Cut off corners at end laps to be covered by next flashing piece.
- .2 Provide chalk lines and install all membrane true to line. Install gusset reinforcement pieces at all corner locations.
- .3 Ensure wall or eave surfaces are clean and dry, free of contaminants or other irregularities. Re-prime as necessary.
- .4 Commence flashings from low points and overlap all side laps minimum 75 mm. Base sheet flashings to extend 100 mm onto roof surface and terminate as shown in drawings.
- .5 Place sheet into primer or adhesive and press into place using hand roller to ensure uniform adhesion. Use hot air welder on all seams and joints to ensure a waterproof seal on all points of termination. Apply flashings free of air pockets, voids, wrinkles or fishmouths.

**3.14 CAP SHEET (ADHERED APPLICATION)**

- .1 Prime all surfaces to receive membrane to manufacturer's recommendations. Ensure all surfaces are free of dust, debris, voids or other contaminants prior to commencement of the membrane installation.
- .2 Lay out roll commencing from the low point, align and reroll from both ends.
- .3 Carefully unroll and embed membrane into adhesive. Immediately use weighted roller as recommended by manufacturer to ensure complete adhesion of membrane to substrate free of voids, air pockets, etc.
- .4 Repeat process for remainder of roll. Ensure corners are cut off end laps that are to be covered with the next roll.
- .5 Use hot air welder to seal all joints and points of termination. Install Type 'A' sealant where specified or as shown on drawings.
- .6 Ensure that a watertight seal of all joints and points of termination is achieved.

**3.15 CAP SHEET FLASHINGS (ADHERED APPLICATION)**

- .1 All flashings to be cut across the roll in 1 m sections. Cut off corners at end laps to be covered by next flashing piece.
- .2 Provide chalk lines and install all membrane true to line. Install cap sheet gusset reinforcement pieces at all corner locations.
- .3 Commence flashings from low points and overlap all side laps minimum 75 mm. Cap sheet flashings to extend 150 mm onto roof surface and terminate as shown in drawings. At wall locations, unless otherwise specified, cap sheet flashings to extend up to 50 mm higher than base sheet flashings.

- .4 Place sheet into primer or adhesive and press into place to ensure uniform adhesion and 13 mm bitumen flow each side of the roll. Apply flashings free of air pockets, voids, wrinkles or fishmouths.
- .5 Use a hot air welder where required for touch-ups or detail work in corner locations or as necessary.
- .6 Secure flashings at 225 mm c/c at walls, eaves and parapets as shown on drawings with nails or screws with 25 mm caps. Cover fasteners with Type 'A' sealant.

### **3.16 DRIP FLASHINGS**

- .1 Follow manufacturer's recommendations as to whether pre-finished flashings built into the roof are to be primed. When primer is required, prime top and underside of all drip flashings to be incorporated with roofing prior to application. Primer must be compatible with both membrane and finishes on pre-finished flashing material. Use primer supplied by the membrane manufacturer. All primer to be dry before proceeding.
- .2 Fabricate and install metal drip flashings built into the roof at locations noted on the drawings as per detail and Section 07 62 00 - Sheet Metal Flashing and Trim. Join flashing with S-lock on face and overlap horizontal joints 50 mm. Mitre and seal inside and outside corners of roof flanges. Seal all overlaps, apply sealant Type 'B' as metal flashing is being installed and clean off any material exposed to view. Avoid contact between caulking and bitumen products.
- .3 Install drip flashing true to line set on top of completed base sheet membrane roofing in continuous strip of Type 'A' sealant. Secure flashings with roofing nails installed in a double staggered row at 100 mm centres. Locate nails no closer than 75 mm from face.
- .4 Install an additional piece of base sheet (minimum 150 mm X 150 mm) centered over joints and corners of drip flashing and carried to within 25 mm of edge. Review procedures with the Consultant before proceeding.
- .5 Install 1-ply of base to 25 mm from drip edge and continuing a minimum of 150 mm beyond flashing flange. Ensure positive bond to all metal as to provide a continuous permanent watertight seal.
- .6 Install cap sheet as specified and trim flush with outside face with hot roofing knife. Work underlying surfaces with broom, roller or wet sponge as required to obtain a positive continuous permanent watertight seal.
- .7 Apply modified bitumen mastic sealant at the edge of the cap sheet sealing to the back of the cant face of the gravel stop.

### **3.17 PLUMBING VENTS, B-VENTS, STACKS AND SLEEVES**

- .1 Inspect and clean soil pipes of debris to ensure they are operational.

- .2 Protect exposed surface during roofing operation and clean surfaces free of bitumen before leaving site.
- .3 Make all penetrations air and watertight at air/vapour barrier by installing self-adhesive membrane flashings 150 mm onto air/vapour barrier and carry up and around projection. Clamp in place and caulk.
- .4 Trim base sheet at roof projections.
- .5 Adjust existing pipes to new flashing heights by either cutting down or extending pipes with matching materials attached with mechanical couplers. Ensure pipes are 38 mm higher than flashing to allow for sealing to prevent condensation.
- .6 Clear all projections free of contaminants and seal junction of base sheet and roof projections with trowel applications of sealant as shown on drawings.
- .7 Install all metal flanges to be built into the membrane before the installation of cap sheet. Insulate sleeves in accordance with drawings as specified. Where required, install telescoping caps to detail.
- .8 Prime topside and underside of all flanges to be incorporated with roofing prior to application. Use primer supplied by the membrane manufacturer. All primer to be dry before installation of membrane roofing or flashing.
- .9 Before installing flashings, install 1-ply base sheet extending to opening. Set flanges in bed of Type 'A' sealant prior to membrane installation, as per manufacturer's recommendations.
- .10 Install 1-ply of base sheet flashings thermofused to the flange to within 25 mm from upturn and continuing a minimum of 225 mm beyond flange. Continue cap sheet to metal upturn. Seal around upturn junction with sealant and touch up with matching granules, as per manufacturer's recommendations.
- .11 Install rain collars over sleeves and stacks as indicated to match adjoining materials and seal with sealant as indicated on drawings.

### **3.18 ROOF HATCH**

- .1 Install hatch plumb and level, centred over curb or opening. Anchor to substrate through flange at anchorage points provided, with fasteners as specified in Section 06 10 53 – Miscellaneous Rough Carpentry or recommended by manufacturer.
- .2 Install hatch to ensure handle and latch are located on the same side as the existing access ladder.
- .3 Install self-adhered membrane air seal around hatch and extend onto air/vapour barrier minimum 150 mm.
- .4 Install hatch in strict accordance with manufacturers printed instructions.
- .5 Refer to Section 07 72 33 – Roof Hatches

### **3.19 LIQUID MEMBRANE FLASHING**

- .1 Using a slow-speed mechanical agitator, thoroughly mix the entire container of resin for two minutes before the addition of catalyst. Pour the resin into a second container if you make a batch mix. Add pre-measured catalyst to the resin component according to the amounts indicated in manufacturer's Catalyst Mixing Chart. Add catalyst only to the amount of material that can be used within 10 to 15 minutes. Stir again for two minutes before applying.
- .2 Apply the first resin layer to the substrate using rollers, brushes or notched squeegees provided for this purpose. The thickness of the first layer must be 1.3 mm to 1.5 mm when wet.
- .3 Lay out the polyester reinforcement on the resin to prevent the formation of wrinkles, swellings or fishmouths.
- .4 Use rollers, brushes or notched squeegees in order to fully saturate resin reinforcement and remove wrinkles and air bubbles under the reinforcement. The appearance of the reinforcement should be slightly opaque without any white trace. It is important to correct these defaults before the resin cures.
- .5 Apply the second resin layer on top of the reinforcement using rollers, brushes or notched squeegees provided for this purpose. The second layer thickness must be 0.6 mm to 0.7 mm when wet.
- .6 Excess resin which is not absorbed should be used to saturate adjacent reinforcement.
- .7 The final resin coating should be smooth and even.
- .8 Each reinforcement shall overlap the previous one by 50 mm laterally and by 100 mm at the ends.

### **3.20 CLEANING**

- .1 At all times, keep the premises free from accumulation of waste materials or rubbish. Stock piling of debris on the roof will not be permitted.
- .2 Repair defects in surface and bitumen runs with granules to match existing to leave the roof in an even consistent finish.
- .3 Leave roof clear of debris and bitumen left by spills and machine tracking.
- .4 Leave grounds and building free of debris and bitumen spread by pedestrian traffic where applicable.
- .5 Clean surfaces and penetrations of all contaminants and touch up to the satisfaction of the Owner. Include rooftop equipment, curbs, soil stacks, sleeves, gas lines, vents, drains and ladders.
- .6 At the completion of the work remove all rubbish, tools, equipment and surplus materials.

- .7 Be responsible to repair and pay all costs and fees required to rectify damage caused by work of the Contract with materials and finish to match original.
- .8 Waste Management: separate waste materials for reuse or recycling.
  - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.
- .9 Proceed in accordance with Section 01 74 11 - Cleaning.

**END OF SECTION**

**Part 1 General**

**1.1 RELATED SECTIONS**

- .1 Section 06 10 53 – Miscellaneous Rough Carpentry.
- .2 Section 07 52 00 – Modified Bituminous Membrane Roofing.
- .3 Section 07 72 33 – Roof Hatches.
- .4 Section 07 92 00 – Joint Sealants.

**1.2 REFERENCE STANDARDS**

- .1 The Aluminum Association Inc. (AAI)
  - .1 AA Aluminum Design Manual 2015 Part VIII Guidelines for Aluminum Sheet Metal Work in Building Construction.
  - .2 AAI DAF45-2003(R2009), Designation System for Aluminum Finishes.
- .2 American Society for Testing and Materials International (ASTM)
  - .1 ASTM A653/A653M-15e1, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .3 Canadian Standards Association (CSA International)
  - .1 CSA A123.3-05(2015), Asphalt Saturated Organic Roofing Felt.
  - .2 CSA A123.22-08(2013), Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.
- .4 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-1.108-M89, Bituminous Solvent Type Paint.
  - .2 CAN/CGSB-51.32-M77, Sheathing, Membrane, Breather Type.
- .5 Canadian Roofing Contractors Association (CRCA)
  - .1 Roofing Specifications Manual 2012.
- .6 Sheet Metal and Air Conditioning Contractors Association of North America (SMACNA)
  - .1 Architectural Sheet Metal Manual – 2012.

**1.3 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit to the Consultant a list of materials intended for use before they are ordered. Submit samples in accordance with Section 01 33 00 – Submittal Procedures.
- .2 Product Data:

- .1 Submit manufacturer's printed product literature including product specifications and technical data sheets for sheet metal flashing fasteners and accessory materials. Include product characteristics, performance criteria, physical size, finish and limitation.
- .2 Submit copies of WHMIS 2015 SDS - Safety Data Sheets in accordance with Section 01 35 29.06 - Health and Safety Requirements and Section 01 35 43 - Environmental Procedures.
- .3 Shop Drawings:
  - .1 Submit shop drawings for all sheet metal fabrications.
  - .2 Indicate sheet thickness, flashing dimensions and fastenings. Include anchorage, expansion joints and other provisions for thermal movement. Indicate all sheet metal profiles to be installed on site, including sizes and configurations.
  - .3 Submit manufacturer's catalogue cut sheets for manufactured items.
- .4 Samples:
  - .1 Submit duplicate 50 x 50 mm samples of each type of sheet metal material, finishes and colours.

#### **1.4 COORDINATION**

- .1 Coordinate work of this Section with Related Work specified in other Sections to ensure construction schedule is maintained and watertightness and protection of the building and finished work is maintained at all times.

#### **1.5 EXAMINATION**

- .1 Do not commence work until surface to be covered has been inspected.
- .2 Inspect work and advise the Consultant of conditions that would adversely affect the work of this trade.
- .3 Commencement of work is proof that the Contractor has accepted surfaces as satisfactory for intended operations and accepts responsibility for appearances and performance of completed work.
- .4 Repair damaged and inferior work caused by work of this Contract with materials and finish to match original to the Consultant's approval.

#### **1.6 MOCK-UPS**

- .1 Submit shop drawings and provide mock-up in accordance with Section 01 33 00 – Submittal Procedures. Before installing materials, provide a 1200 mm mock-up for each profile before fabrication. Cost of mock-up to be included in the Contractor's base bid.
- .2 Mock-up samples to indicate type, colour, size, method of joints, seam, expansion provisions, stiffeners, cleat fasteners and method of sealing joints. Fit mock-up to each applicable roof profile or edge.

- .3 Review mock-up with drawings to ensure design intent can be achieved. Verify all elevations including those with matching materials and sections. Verify that continuity of air seals can be achieved. Verify attachments, methods for securing and strengths to ensure that work can support the anticipated loads and will remain in place against all wind, weather and service condition without warping or deforming.
- .4 Make adjustments to the work that results from a review of the mock-up without additional cost.
- .5 Acceptable mock-ups may be left in place as part of the final product.

## **1.7 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Safety: Comply with requirements of Workplace Hazardous Materials Information System (WHMIS 2015) regarding use, handling, storage, and disposal of materials.
- .3 Manufacturer's recommendations for handling and storing products are to be considered a minimum requirement.
- .4 Materials shall be delivered to the site, undamaged and in their original packages, with manufacturer's labels visible, attesting to their conformity to specific standards.

## **Part 2 Products**

### **2.1 GENERAL**

- .1 All standards, regulations and specifications listed herein are considered to be the latest available edition.
- .2 Compatibility between materials is essential. Use only materials that are known to be compatible when incorporated in a completed assembly.

### **2.2 PREFINISHED SHEET METAL FLASHING**

- .1 Pre-finished metal flashings: As shown on drawings, fabricate from 0.65 mm (24 ga.) steel to ASTM A653 Grade 230 with G90 zinc coating. Surface with Perspectra Series baked enamel finish. Colour to selected by Owner from manufacturer's standard colour range.

### **2.3 SHEET METAL MATERIALS**

- .1 Aluminum-zinc alloy coated steel sheet: to ASTM A792/A792M, commercial quality, grade 37 with AZ180 coating, regular spangle surface.

## 2.4 ACCESSORIES

- .1 Metal cleat: same material as metal flashings, 50 mm wide @ 600 mm c/c.
- .2 Continuous metal starter strip: 0.71 mm (24 ga.) galvanized steel, secured at 400 mm c/c.
- .3 Use nails or screws as most compatible with materials and preservatives being utilized.
- .4 Nails: Annular threaded nails of length to penetrate into bases minimum 25 mm. No. 8 screws to penetrate wood 19 mm at 600 mm c/c.
- .5 Masonry fasteners: Tapcon, Permagrip or Tapgrip or Rawl. Spike sized to penetrate concrete 38 mm minimum as specified or shown.
- .6 Exposed fasteners: Where exposed fasteners are specified or as shown, use #10 screws with metal and neoprene washers pre-finished to match colour of flashing. Alternatively, use screws with colour match nylon caps where shown or approved by the Consultant.
- .7 Screws for starter strips and fascia: #8 @ 400 mm c/c.
- .8 Wedges: Rolled plumber sheet lead.
- .9 Sealant: Refer to Drawings and Section 07 92 00 – Joint Sealants.
- .10 Bitumen paint: To CAN/CGSB-1.108 Type II. Gilsonite asphalt paint.
  - .1 Acceptable product: 810-07 by Henry or approved equivalent.
- .11 Weather barrier membrane: Dry sheathing to CAN/CGSB-51.32, No. 15 perforated asphalt felt to CSA A123.3.
- .12 Self-adhered membrane to Section 07 26 00 – Vapour Retarders.
- .13 Touch-up paint: As recommended by prefinished material manufacturer.

## 2.5 FABRICATION

- .1 Fabricate metal flashings and other sheet metal work in accordance with applicable details, as indicated. Where not indicated, follow applicable CRCA 'FL' series details and SMACNA architectural details.
- .2 Fabricate aluminum flashings and other sheet aluminum work in accordance with AAI-Aluminum Sheet Metal Work in Building Construction.
  - .1 For aluminum sheet metal flashing, trim and fabrications to be anodized, complete forming prior to anodizing.
- .3 Metal shall be formed on a bending brake, shaping trimmed and hard seaming shall be done on bench, as far as practicable, with proper sheet metal working tools. Angles of bends and folds for interlocking metal shall be made with full

regard to expansion and contraction to avoid buckling and to avoid damaging metal surfaces.

- .4 Fabricate all possible work in shop in maximum 2400 mm lengths by brake forming, bench cutting, drilling and shaping. Match existing profiles where metal flashing is to be repaired.
- .5 Hem exposed edges on underside 13 mm. Mitre and seal corners with sealant.
- .6 Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.
- .7 Dry joints are to be tight but not dented so as to permit slight adjustments of sheets and yet remain watertight.
- .8 Lock seams at all corners.
- .9 Apply isolation coating to metal surfaces to be embedded in concrete or mortar.
- .10 Supply all accessories required for installation of sheet metal work of this Section. Fabricate accessories of same material to which they will be used.

## **2.6 REGLETS**

- .1 Form reglet flashings from same material as other metal flashings, unless otherwise indicated.

## **2.7 ALUMINUM FINISHES**

- .1 Finish exposed surfaces of aluminum components in accordance with AA DAF45.
  - .1 Clear anodic finish: Type II, Class 1 to ASTM B244.
- .2 Appearance and properties of anodized finishes designated by Aluminum Association as Architectural Class 1, Architectural Class 2, and Protective and Decorative: to AAMA/WDMA/CSA-101/I.S.2/A440, for coating Classes 1, 2 and 3 respectively.

## **Part 3 Execution**

### **3.1 MANUFACTURER'S INSTRUCTIONS**

- .1 Compliance: Comply with manufacturer's written recommendations, including product technical bulletins, handling, storage and installation instructions, and datasheets.

### **3.2 SHEET METAL FLASHING INSTALLATION**

- .1 Install sheet metal flashings at copings, walls, expansion joints, roof openings and other components required to protect the membrane flashings as shown on

the drawings or otherwise required. Where not indicated, follow applicable CRCA 'FL' series details.

- .2 Install continuous concealed starter strips at all exterior faces. Install cleats between lock joints and as indicated to permanently hold flashing in place. Install hook strip fasteners with 2 fasteners per cleat.
- .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, true to line, free of dents, warping and distortion.
- .4 Back-paint sheet metal that comes into contact with another kind of metal, masonry or concrete with bituminous paint at the rate of 0.15 L/m<sup>2</sup>.
- .5 Install sheet metal with concealed fasteners at lock joints. Exposed fastening will only be permitted with the approval of the Consultant. When exposed fasteners are shown, space all fasteners evenly in an approved manner. Use lead plugs and screws with neoprene washers where fasteners are exposed, otherwise use concrete drive fasteners where metal flashings are installed over concrete masonry.
- .6 Install weather barrier membrane under sheet metal where indicated.
- .7 Self-Adhered Membrane:
  - .1 Install 1-ply of self-adhered membrane to detail under sheet metal on horizontal or vertical surfaces that are not otherwise covered by membrane flashings.
  - .2 Ensure all surfaces to be covered with self-adhered membrane are complete and free of moisture and contaminants. At temperatures below 5°C (40°F) heat materials to be covered with hot air gun. Store all materials in heated storage above 5°C (40°F) and remove only as much material as can be used before cooling.
  - .3 Prime all surfaces to be covered with self-adhered membrane. Let primer tack dry and complete thumb test to ensure.
  - .4 Remove paper backing and install membrane true to line to completely cover the area intended to be protected to points shown on the drawing.
  - .5 Roll or work material into place by hand to ensure a positive bond.
  - .6 Membrane to be installed without air blisters and wrinkles. Rework, repair or replace all poorly installed membrane. Do not stretch material that would result in pull back and deformity of the membrane at intersections.
  - .7 Lap all side laps 75 mm and end laps 150 mm. Secure all membrane on vertical surface at points of termination at 150 mm c/c.
  - .8 Turn up membrane 150 mm at edge where horizontal surface meets vertical planes.
  - .9 Seal all points of termination at horizontal planes and vertical surfaces with modified sealant. Tool sealant to consistent smooth and even surface.

- .10 It is recommended that all self-adhering membrane be installed by a team of two workmen. Avoid working in windy conditions or weather that would result in inferior product.
- .8 Join sheet metal by "S" lock seams, to permit thermal movement. Seal all fasteners and completely fill all joints with Type 'B' sealant as flashing is being installed. Clean off all excessive visible material subsequent to installation.
- .9 When flashing is being installed in more than one piece, offset joints in adjacent flashings by approximately 50%.
- .10 Form inside and outside corners by means of locked seams. Do not use pop rivets unless accepted by Consultant.
- .11 Slope all metal to interior of roof area to maintain slope, unless otherwise indicated. Do not form open joints or pockets that fail to drain water.
- .12 Where existing reglets are to be re-used, remove existing sealant and re-cut to conform to the size requirements specified herein.

### **3.3 REGLETS**

- .1 Cut reglets in existing mortar joint or other materials as indicated. Unless otherwise indicated, cut continuous rectangular slot 25 mm deep height of mortar joint where metal flashings are to terminate. Clean free of dust and contaminants.
- .2 Install membrane flashing materials as indicated. Form metal flashing to fit into reglet slot with return.
- .3 Install lead wedges at maximum 300 mm c/c, keep back 6 mm from face of joint.
- .4 Install backer rod and sealant Type 'B' to fill reglet slot and shed water out onto metal flashing face. Tool uniformly.
- .5 Fasten metal flashing to vertical walls as indicated below reglet level, maximum 900 mm on centre.

### **3.4 CLEANING**

- .1 Proceed in accordance with Section 01 74 00 - Cleaning.
- .2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment. Remove and replace all sheet metal sections that received surface damage or scratches during fabrication, delivery or installation.
- .3 For scratches and scuffs to be retained in the new installation, use touch up paint recommended by the metal material supplier.
- .4 Leave work areas clean, free from grease, finger marks and stains.

**END OF SECTION**

**Part 1      General**

**1.1          DEFINITIONS**

- .1 Provide labour, materials, products, equipment and services to complete the roof hatches work specified herein. This includes, but is not necessarily limited, to:
  - .1 Personnel roof hatches.
  - .2 Auxiliary materials required for a complete installation.

**1.2          RELATED REQUIREMENTS**

- .1 Section 06 10 53 - Miscellaneous Rough Carpentry
- .2 Section 07 52 00 - Modified Bituminous Membrane Roofing
- .3 Section 07 92 00 - Joint Sealants

**1.3          COORDINATION**

- .1 Coordinate layout and installation of roof hatches with roofing membrane and base flashing and interfacing and adjoining construction to provide a leakproof, weathertight, secure, and noncorrosive installation.
- .2 Coordinate dimensions with rough-in information or Shop Drawings of equipment to be supported.

**1.4          ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's instructions, product literature and data sheets for roof hatches and include product characteristics, performance criteria, dimensions, finishes, and limitations.
  - .2 Submit WHMIS SDS.
  - .3 Indicate VOC's for sealants during application and curing.
- .3 Shop Drawings:
  - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Nova Scotia Canada.
  - .2 Indicate size and description of components, materials, attachment devices, description of frame and finish, and construction details.
- .4 Manufacturer's Instructions:
  - .1 Submit manufacturer's installation instructions.
  - .2 Low-Emitting Materials:
    - .1 Submit listing of paints and coatings used in building, comply with VOC and chemical component limits or restriction requirements.
- .5 Warranty: Sample of special warranty.

## **1.5 QUALITY ASSURANCE**

- .1 Test Reports: submit certified test reports showing compliance with specified performance characteristics and physical properties.
- .2 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

## **1.6 CLOSEOUT SUBMITTALS**

- .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2 Submit operation and maintenance data for hardware complete with pertinent details, spare parts lists and warnings against harmful maintenance materials and practices for incorporation into manual.

## **1.7 DELIVERY, STORAGE, AND HANDLING**

- .1 Perform in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
  - .1 Store materials off ground, in a clean dry location and in accordance with manufacturer's recommendations.
  - .2 Store and protect roof hatches from weather and damage.

## **1.8 SITE CONDITIONS**

- .1 Verify related work of other trades is complete prior to installing roof hatch and coordinate installation with roof membrane and roof insulation.
- .2 Verify all measurements related to supply and installation of new roof hatches.
- .3 Verify that an air seal has been properly installed before installation of roof hatches.

## **1.9 WARRANTY**

- .1 Special Warranty on Painted Finishes: Manufacturer's standard form in which manufacturer agrees to repair finishes or replace roof hatches that show evidence of deterioration of factory- applied finishes within specified warranty period.
  - .1 Fluoropolymer Finish: Deterioration includes, but is not limited to, the following:
    - .1 Colour fading more than 5 Hunter units when tested according to ASTM D 2244.
    - .2 Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
    - .3 Cracking, checking, peeling, or failure of paint to adhere to bare metal.

- .2 Finish Warranty Period: 10 years from date of Substantial Performance of the Work.
- .2 Submit in accordance with Section 01 78 00 – Closeout Submittals.

**Part 2 Products**

**2.1 PERFORMANCE CHARACTERISTICS**

- .1 Cover shall be reinforced to support a minimum live load of 1.9 kPa (40 psf) with a maximum deflection of 1/150th of the span and a maximum design pressure of +/- 4.8 kPa (100 psf) with a design factor of 2 aluminum roof hatches.
- .2 Sizes: 750 by 900 mm (30 by 36 inches).
- .3 Operation of the cover shall be smooth and easy with controlled operation throughout the entire arc of opening and closing.
- .4 Entire hatch shall be weather tight with fully welded corner joints on cover and curb.
- .5 Cover: Shall be 11 gauge (2.3 mm) aluminum with a 76 mm (3") beaded flange with formed reinforcing members. Cover shall have a heavy extruded EPDM rubber gasket that is bonded to the cover interior to assure a continuous seal when compressed to the top surface of the curb.
- .6 Cover Insulation: Shall be fiberglass of 25 mm (1") thickness, fully covered and protected by an 18 gauge (1mm) aluminum liner.
- .7 Curb: Shall be 305 mm (12") in height and of 11 gauge (2.3mm) aluminum. The curb shall be formed with a 89 mm (3-1.2") flange with 11.1 mm (7/16") holes provided for securing to the roof deck. The curb shall be equipped with an integral metal cap flashing of the same gauge and material as the curb, fully welded at the corners including stamped tabs, 153 mm (6") on center, to be bent inward to hold membrane securely in place.
- .8 Curb insulation: Shall be rigid, high-density fiberboard of 25 mm (1") thickness on outside of curb.
- .9 Lifting mechanisms: Manufacturer shall provide compression spring operators enclosed in telescopic tubes to provide, smooth, easy, and controlled cover operation throughout the entire arc of opening and closing. The upper tube shall be the outer tube to prevent accumulation of moisture, grit, and debris inside the lower tube assembly. The lower tube shall interlock with a flanged support shoe welded to the curb assembly.
- .10 Hardware
  - .1 Heavy pintle hinges shall be provided
  - .2 Cover shall be equipped with a spring latch with interior and exterior turn handles
  - .3 Roof hatch shall be equipped with interior and exterior padlock hasps.
  - .4 The latch strike shall be a stamped component bolted to the curb assembly.

- .5 Cover shall automatically lock in the open position with a rigid hold open arm equipped with a 25 mm diameter red vinyl grip handle to permit easy release for closing.
- .6 All hardware shall be zinc plated and chromate sealed.
- .7 Cover hardware shall be bolted into heavy gauge channel reinforcing welded to the underside of the cover and concealed within the insulation space.
- .8 Finishes: Manufacturers standard mill finished aluminum.
- .11 Ladder Safety Post: Manufacturer's standard ladder safety post. Post to lock in place on full extension. Provide release mechanism to return post to closed position.
- .12 Standard of acceptance:
  - .1 Type S-50 Roof Hatch by Bilco Company

## **2.2 FABRICATION**

- .1 Fabricate components free of twists, bends, or visual distortion and insulated. Weld corners and joints.
- .2 Assemble roof hatch components.
- .3 Ensure continuity of weather-tight seal.
- .4 Design flashings to collect and lead off accumulated condensation.
- .5 Zinc plate hardware and attachments and shop prime ready for site painting.

## **2.3 ACCESSORIES**

- .1 Gaskets: extruded resilient neoprene, with full recovery after 50% compression.
- .2 Fasteners: Screws to manufacturers standard. cadmium plated steel for curb to structure and for hatch lip frame to outer attachment.
- .3 Sealants:
  - .1 In accordance with manufacturer's recommendations
  - .2 See Section 07 92 00 - Joint Sealants
- .4 Primers and Paints: in accordance with manufacturer's recommendations for surface conditions

## **Part 3 Execution**

### **3.1 EXAMINATION**

- .1 Verification of Conditions: Verify that conditions of substrate previously installed are acceptable for roof hatch installation in accordance with manufacturer's instructions.
  - .1 Inspect substrate.
  - .2 Inform Owner/ Consultant of unacceptable conditions immediately upon discovery.

- .3 Proceed with installation only after unacceptable conditions have been remedied.

### **3.2 INSTALLATION**

- .1 Install roof hatches in strict accordance with manufacturer's written instructions
- .2 Erect components plumb, level and in proper alignment.
- .3 Ensure continuity of building envelope air barrier and vapour retarder systems.
- .4 Adjust and seal assembly with provision for expansion and contraction of components.
- .5 Secure prefabricated curb assembly to structure.
- .6 Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer
  - .1 Coat concealed side of uncoated aluminum roof hatches with bituminous coating where in contact with wood, ferrous metal, or cementitious construction.
  - .2 Underlayment: Where installing roof hatches directly on cementitious or wood substrates, install a course of felt underlayment and cover with a slip sheet, or install a course of polyethylene sheet.
  - .3 Bed flanges in thick coat of asphalt roofing cement where required by manufacturers of roof hatches for waterproof performance.
- .7 Secure and seal frame to curb.
- .8 Verify that roof hatches operates properly. Clean, lubricate, and adjust operating mechanism and hardware.
- .9 Seal joints with elastomeric or butyl sealant as required by roof accessory manufacturer.

### **3.3 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
- .2 Final Cleaning: remove surplus materials, rubbish, tools and equipment upon completion

### **3.4 PROTECTION**

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by roof hatch installation.

**END OF SECTION**



**PART 1      General**

**1.1            REFERENCES**

- .1 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-19.13-M87, Sealing Compound, One-component, Elastomeric, Chemical Curing.
  - .2 CAN/CGSB-19.17-M90, One-Component Acrylic Emulsion Base Sealing Compound.
  - .3 CAN/CGSB-19.24-M90, Multi-component, Chemical Curing Sealing Compound.
- .2 General Services Administration (GSA) - Federal Specifications (FS)
  - .1 FS-SS-S-200-E(2)1993, Sealants, Joint, Two-Component, Jet-Blast-Resistant, Cold Applied, for Portland Cement Concrete Pavement.

**1.2            ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for joint sealants and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Manufacturer's product to describe:
    - .1 Caulking compound.
    - .2 Primers.
    - .3 Sealing compound, each type, including compatibility when different sealants are in contact with each other.
  - .3 Submit 2 copies of WHMIS 2015 SDS in accordance with Section 01 35 29.06 - Health and Safety Requirements and Section 01 35 43 - Environmental Procedures.
- .3 Manufacturer's Instructions: Submit instructions to include installation instructions for each product used.

**1.3            DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
  - .1 Store materials in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect joint sealants from nicks, scratches, and blemishes.

- .3 Replace defective or damaged materials with new.

## **1.4 SITE CONDITIONS**

- .1 Ambient Conditions:
  - .1 Proceed with installation of joint sealants only when:
    - .1 Ambient and substrate temperature conditions are within limits permitted by joint sealant manufacturer or are above 4.4°C.
    - .2 Joint substrates are dry.
    - .3 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.
  - .2 Joint-Width Conditions:
    - .1 Proceed with installation of joint sealants only where joint widths are more than those allowed by joint sealant manufacturer for applications indicated.
  - .3 Joint-Substrate Conditions:
    - .1 Proceed with installation of joint sealants only after contaminants capable of interfering with adhesion are removed from joint substrates.

## **PART 2 Products**

### **2.1 SEALANT MATERIALS**

- .1 Do not use caulking that emits strong odours, contains toxic chemicals or is not certified as mould resistant in air handling units.
- .2 When low toxicity caulks are not possible, confine usage to areas which off gas to exterior, are contained behind air barriers, or are applied several months before occupancy to maximize off gas time.
- .3 Where sealants are qualified with primers use only these primers.

### **2.2 SEALANT MATERIAL DESIGNATIONS**

- .1 Modified bitumen sealant (Sealant Type 'A'):
  - .1 For penetration and terminations of bituminous and modified bituminous membrane: As recommended by membrane manufacturer.
  - .2 Standard of acceptance:
    - .1 Sopramastic 200 by Soprema.
    - .2 MBR Flashing Cement by Johns Manville.
    - .3 Polybitume 570-05 by Henry Bakor.
    - .4 Or accepted alternate.
- .2 Silicones one part (Sealant Type 'B'):

- .1 To CAN/CGSB-19.13 and ASTM C920, Type S, Grade NS, Class 35, colour to match surfaces.
- .2 Standard of acceptance:
  - .1 Tremcill 400 by Tremco.
  - .2 Dowsil CWS by Dow.
  - .3 Or accepted alternate.
- .3 Preformed compressible and non-compressible back-up materials:
  - .1 Backer rod:
    - .1 Polyethylene, urethane, neoprene or vinyl foam closed cell, oversized 30 to 50 %, Shore 'A' hardness 20, tensile strength 140 to 210 kPa.

### **2.3 JOINT CLEANER**

- .1 Non-corrosive and non-staining type, compatible with joint forming materials and sealant recommended by sealant manufacturer.

### **2.4 PRIMER**

- .1 As recommended by sealant manufacturer for specific substrate adhesion.

## **PART 3 Execution**

### **3.1 EXAMINATION**

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for joint sealants installation in accordance with manufacturer's written instructions.
  - .1 Visually inspect substrate in presence of Consultant.
  - .2 Inform Consultant of unacceptable conditions immediately upon discovery.
  - .3 Proceed with installation only after unacceptable conditions have been remedied.

### **3.2 SURFACE PREPARATION**

- .1 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.
- .2 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter which may impair Work.
- .3 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.
- .4 Ensure joint surfaces are dry and frost free.

- .5 Prepare surfaces in accordance with manufacturer's directions.

### **3.3 PRIMING**

- .1 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.
- .2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

### **3.4 BACKUP MATERIAL**

- .1 Install joint filler to achieve correct joint depth and shape, with approximately 30% compression.

### **3.5 APPLICATION**

- .1 Sealant:
  - .1 Apply sealant in accordance with manufacturer's written instructions.
  - .2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.
  - .3 Apply sealant in continuous beads.
  - .4 Apply sealant using gun with proper size nozzle.
  - .5 Use sufficient pressure to fill voids and joints solid.
  - .6 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.
  - .7 Tool exposed surfaces before skinning begins to give slightly concave shape.
  - .8 Remove excess compound promptly as work progresses and upon completion.
- .2 Sealant Type 'A':
  - .1 Install sealant Type 'A' to the top of membrane flashings where required or as shown on drawings. Modified sealant to be installed around finished flashings at all protrusions including soil stacks, sleeves, pitch boxes and fasteners securing membrane to walls.
  - .2 Apply sealant Type 'A' with hand trowel to achieve a 25 mm width and minimum 3 mm thickness.
  - .3 Apply sealant Type 'A' immediately after flashings have been installed and are still warm. No membrane flashings shall be left uncovered at the end of any work period. *(Non-compliance with this mandate may result in rejection, removal and replacement of the membrane flashings to the affected area).*
  - .4 Trowel sealant Type 'A' in two directions to ensure proper adhesion to substrate and that all surface irregularities are filled. Tool surface of modified sealant to smooth finish.
  - .5 Install sealant Type 'A' at the underside of drains, metal sleeves and other location where specified on drawings.

- .3 Install sealant Type 'B' at exterior perimeter or window and door frames.
- .4 Curing:
  - .1 Cure sealants in accordance with sealant manufacturer's instructions.
  - .2 Do not cover up sealants until proper curing has taken place.

### **3.6 CLEANING**

- .1 Clean in accordance with Section 01 74 00 - Cleaning.
  - .1 Leave Work area clean at end of each day. Clean adjacent surfaces immediately.
  - .2 Remove excess and droppings, using recommended cleaners as work progresses.
  - .3 Remove masking tape after initial set of sealant.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.

### **3.7 PROTECTION**

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by joint sealants installation.

**END OF SECTION**