



REQUEST FOR QUOTATIONS

Title: Roof Replacement – Bridgeview Community Centre
Reference No.: 1220-040-2016-073

MINOR WORKS SERVICES

(Construction Services)

REQUEST FOR QUOTATIONS

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REQUEST FOR QUOTATIONS

1. INTRODUCTION

The City of Surrey (the "City") invites contractors to provide a quotation on the form attached as Schedule C (the "Quotation") for the supply of the goods (if any) and services described in Schedule A (the "Work"). The description of the Work sets out the minimum requirements of the City. A person that submits a Quotation (the "Contractor") should prepare a Quotation that meets the minimum requirements, and may as it may choose, in addition, to also include goods, services or terms that exceed the minimum requirements.

2. ADDRESS FOR DELIVERY

A Quotation should be labelled with the Contractor's name, RFQ title and number. A Quotation should be submitted in the form attached to this RFQ as Schedule C – Form of Quotation.

The Contractor may submit a Quotation either by email or in a hard copy, as follows:

(a) Email

If the Contractor chooses to submit by email, the Contractor should submit the Quotation electronically in a single pdf file to the City by email at: purchasing@surrey.ca.

PDF emailed Quotations are preferred and the City will confirm receipt of emails. Note that the maximum file size the City can receive is 10Mb. If sending large email attachments, Contractors should phone to confirm receipt. A Contractor bears all risk that the City's equipment functions properly so that the City receives the Quotation.

(b) Hard Copy

If the Contractor chooses NOT to submit by email, the Contractor should submit one original unbound Quotation and two (2) copies (three (3) in total) which should be delivered to the City at the office of:

Name: Richard D. Oppelt
Purchasing Manager
at the following location:

Address: Surrey City Hall
Finance & Technology Department – Purchasing Section
Reception Counter 5th Floor West
13450 – 104th Avenue, Surrey, B.C., Canada, V3T 1V8

3. DATE

The City would prefer to receive Quotations on or before **July 12, 2016**. The City's office hours are 8:30 a.m. to 4:00 p.m., Monday to Friday, except statutory holidays.

4. INQUIRIES

All inquiries related to this Request for Quotations ("RFQ") should be directed in writing to:

Name: Richard D. Oppelt, Purchasing Manager
Email: purchasing@surrey.ca
Reference: 1220-040-2016-073

5. ADDENDA

If the City determines that an amendment is required to this RFQ, the City's Representative will issue a written addendum by posting it on the BC Bid Website at www.bcbid.gov.bc.ca (the "BC Bid Website") and the City Website at www.surrey.ca (the "City Website") that will form a part of this RFQ. It is the responsibility of Contractor to check the BC Bid Website and the City Website for addenda. The only way this RFQ may be added to, or amended in any way, is by a formal written addendum. No other communication, whether written or oral, from any person will affect or modify the terms of this RFP or may be relied upon by any Contractor. By delivery of a Quotation, the Contractor is deemed to have received, accepted and understood the entire RFQ, including any and all addenda.

6. NO CONTRACT

This RFQ is simply an invitation for quotations (including prices and terms) for the convenience of all parties. It is not a tender and no obligations of any kind will arise from this RFQ or the submission of Quotations. The City may negotiate changes to any terms of a Quotation, including terms in Schedule A, Schedule B and Schedule C and including prices, and may negotiate with one or more Contractors or may at any time invite or permit the submission of quotations (including prices and terms) from other parties who have not submitted Quotations.

7. ACCEPTANCE

A Quotation will be an offer to the City which the City may accept at any time by signing the copy of the Quotation and delivering it to the Contractor. A Quotation is not accepted by the City unless and until both the authorized signatory and the purchasing representative have signed the Contract on behalf of the City. Delivery of the signed Quotation by the City may be by pdf email. In that event, the resulting Contract will be comprised of the documents included in the definition of Contract in Schedule B – Draft Contract – Minor Works.

8. CONTRACTOR'S EXPENSES

Contractors are solely responsible for their own expenses in preparing and submitting Quotations, and for any meetings, negotiations or discussions with the City or its representatives and consultants, relating to or arising from the RFQ. The City will not be liable to any Contractor for any claims, whether for costs, expenses, losses or damages, or loss of anticipated profits, incurred by the Contractor in preparing and submitting a Quotation, or participating in negotiations for a contract, or other activity related to or arising out of this RFQ.

9. CONTRACTOR'S QUALIFICATIONS

By submitting a Quotation, a Contractor represents that it has the expertise, qualifications, resources, and relevant experience with the requirements of the Work. Tradesmen engaged in the performance of the Work shall be qualified in accordance with the requirements of the *Tradesman Qualification Act* and all pertinent licensing requirements required by the Ministry of Municipal Affairs.

10. CONFLICT OF INTEREST

A Contractor must disclose in its Quotation any actual or potential conflicts of interest and existing business relationships it may have with the City, its elected or appointed officials or employees. The City may rely on such disclosure.

11. SOLICITATION OF COUNCIL MEMBERS, CITY STAFF AND CITY CONSULTANTS

Contractors and their agents will not contact any member of the City Council, City staff or City consultants with respect to this RFQ, other than the contact person named in Section 4, at any time prior to the award of a contract or the cancellation of this RFQ.

12. CONFIDENTIALITY

All Quotations become the property of the City and will not be returned to the Contractor. All Quotations will be held in confidence by the City unless otherwise required by law. Contractors should be aware the City is a "public body" defined by and subject to the Freedom of Information and Protection of Privacy Act of British Columbia.

13. SIGNATURE

The legal name of the person or firm submitting the Quotation should be inserted in the Quotation. The Quotation should be signed by a person authorized to sign on behalf of the Contractor and include the following:

- (a) If the Contractor is a corporation then the full name of the corporation should be included, together with the names of authorized signatories. The Quotation should be executed by all of the authorized signatories or by one or more of them provided that a copy of the corporate resolution authorizing those persons to execute the Quotation on behalf of the corporation is submitted;
- (b) If the Contractor is a partnership or joint venture then the name of the partnership or joint venture and the name of each partner or joint venturer should be included, and each partner or joint venturer should sign personally (or, if one or more person(s) have signing authority for the partnership or joint venture, the partnership or joint venture should provide evidence to the satisfaction of the City that the person(s) signing have signing authority for the partnership or joint venture). If a partner or joint venturer is a corporation then such corporation should sign as indicated in subsection (a) above; or
- (c) If the Contractor is an individual, including a sole proprietorship, the name of the individual should be included.

14. INFORMATION MEETING

An information meeting will be hosted by the City Representative to discuss the City's requirements under this RFQ (the "Information Meeting"). While attendance is at the discretion of Contractors, Contractors who do not attend will be deemed to have attended the Information Meeting and to have received all of the information given at the Information Meeting.

At the time of issuance of this RFQ a meeting has been scheduled as follows:

Date: **June 29, 2016**

Time: 10:00 a.m.

Location: Bridgeview Community Centre
11475 126A Street, Surrey, BC V3V 5G8

Contractors are to examine the site prior to submitting a Quotation to fully acquaint themselves with all existing conditions reasonably inferable from examination of the site and its surroundings and the RFQ and to make allowance for such conditions in the Quotation. By submitting a Quotation, a Contractor represents that it has examined the site fully as to all conditions, contingencies, risks and circumstances, local or otherwise, which might influence or affect the performance or the cost of the work, including but not limited to: location of the work, location of buildings on the site, adjacent properties, Contractor occupancy during the work, access and all other conditions that a competent Contractor experienced in work similar to the work would consider and take into account, and is further deemed to have included in the contract price all costs occasioned thereby.

15. PROPRIETARY NAMES

Proprietary Names - Use of manufacturers' names or proprietary names in the Contract Documents is solely for the purpose of describing the article, indicating an acceptable standard of quality, or identifying required compatibility with other equipment.

Products - Contractors who wish to substitute equivalent or superior products instead of specified products should submit a request in writing to the City preferably seven working days prior to the date for submissions. Approval of substitute products will be made only by addendum.

SCHEDULE A – SCOPE OF WORK AND DRAWINGS

PROJECT TITLE: **Roof Replacement – Bridgeview Community Centre**

PROJECT No.: **1220-040-2016-073.**

1. DESCRIPTION OF SCOPE OF WORK

To provide all labour, supervision, materials, plant, equipment, layout, survey, permits, and inspections, and related services for Bridgeview Community Centre Roof Replacement. Furnish certificates confirming work conforms to requirements of Authorities having jurisdiction.

Job site location is Bridgeview Community Centre, 11475 126A Street, Surrey, B.C., V3V 5G8.

The general components of the work include roof replacement and related works but not limited to the following:

- replacement of roof and related works;
- removal and disposal of existing roofing materials, flashings, etc. to the existing deck and or walls as required to facilitate the written Specifications, Roof Plans and Details enclosed;
- provision of all labour, materials and equipment deemed necessary to install new wood, roof system, sheet metal flashings and components, etc., as required by the written Specifications; and
- supply and install new roofing system as required.

The detailed scope of work is as described on the Contract Drawings (listed below), Special Provisions (Schedule B – Appendix 1), and Supplementary Specifications (Project) (Schedule B- Appendix 2).

The lack of and/or omission of detailed specifications does not minimize the acceptable levels of service and only the best commercial practices are acceptable.

Contractor to comply with all BC Plumbing Code, BC Fire Marshal, BC Workers' Compensation Board, National Building Code of Canada, BC Boiler Inspector, BC Electrical Inspector, National Fire Protection Association, and any other authorities having local jurisdiction. Failure to abide by these rules and regulations will result in being immediately escorted from the work site.

2. CONTRACT DRAWINGS (e.g. Architectural; Mechanical; Electrical and Structural)

The following drawings are included as part of this RFQ.

DRAWING NUMBER	DRAWING INDEX/TITLE	DATE OF ISSUE
Consultant: IRC Building Sciences Group		
R1	Roof Plan	June 13, 2016
VCMM780	Skylight Detail	-
VCMM7181	Prefabricated Curb Detail	-
VCMM782	Prefabricated Curb Detail	-
VEMM032	Sleeper Detail	-
VDMM314	Drain Detail	-
VPMM949	Parapet Detail	-
VGMM954	Parapet Detail	-
VRMM606	Cladding Wall Detail	-
VRMM607	Cladding Wall Detail	-
VSMM608	Wall Detail	-
VSMM628	Gas Retro Box Detail	-
VSMM629	Conduit Detail: Electric Roof Flashing	-
VSMM635	Plumbing Stack Detail	-
VSMM641	Pipe Flashing Detail	-
VVMN050	Gasline / Conduit Support	-

**SCHEDULE B
SAMPLE – CONSTRUCTION CONTRACT**

Title: Roof Replacement – Bridgeview Community Centre

AGREEMENT No.: 1220-040-2016-073

THIS AGREEMENT dated the _____ day of _____, 201__.

BETWEEN:

CITY OF SURREY
13450 – 104 Avenue
Surrey, B.C., Canada, V3T 1V8

(the "**City**")

OF THE FIRST PART

AND:

(Full legal name and address of Contractor)

(the "**Contractor**")

OF THE SECOND PART

WHEREAS the Contractor wishes to undertake the following project for the benefit of the City:

Roof Replacement – Bridgeview Community Centre

NOW THEREFORE THIS CONTRACT WITNESSETH that in consideration of the premises and payment of One (\$1.00) Dollar and other good and valuable consideration paid by each of the parties to each other (the receipt and sufficiency of which each party hereby acknowledges), the parties hereby covenant and agree with each other as follows:

1. DEFINITIONS

1.1 For the purposes of this Contract, the following terms shall have the meanings set forth below:

- (a) "Certification of Completion" means a certificate issued indicating that Substantial Performance of the Work has been achieved;

- (b) "Certificate of Total Performance" means a certificate issued indicating that the Work has been achieved;
- (c) "Change" means:
 - (i) an addition to the Work that is both of a type and character similar to the Work as defined in the Contract Documents; or
 - (ii) a deletion of the Work indicated in the Contract Documents; or
 - (iii) an alteration of the Work indicated in the Contract Documents, within the general scope of the Work as described in the Contract Documents;
- (d) "Change Order" means a written approval setting out a description of the Work covered by the Change, the price or method of valuation for the Work, the change in the Contract Price and adjustment, if any, to the Contract Time;
- (e) "City" means the City of Surrey;
- (f) "Consultant" is the person or entity engaged by the City and identified as such in the Contract;
- (g) "Contract Administrator" is the person or entity engaged by the City and identified as such in the Contract;
- (h) "Construction Schedule" means a construction schedule indicating the planned start and completion dates of the major activities of the Work as set out in Appendix 4;
- (i) "Contract" means this Contract as set out and described in the Contract Documents;
- (j) "Contract Documents" means this Contract including all schedules and appendices, construction standards, specifications and drawings;
- (k) "Contract Price" means the price of the Work as set out Section 4.1 of this Contract;
- (l) "Contract Time" means the period of time for the completion of the Work as provided by the Contract Documents;
- (m) "Contractor" means the person, firm or corporation identified as such in this Contract and includes the Contractor's authorized representative as designated to the City in writing;
- (n) "Contractor's Representative" means the person appointed by the Contractor to represent the Contractor for the purposes of this Contract and so notified to the City in writing;
- (o) "Drawings" means the graphic and pictorial portions of the Contract Documents, wherever located and whenever issued, showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details and diagrams;
- (p) "Extra Work" means additional Work that the City may wish performed that is Extra Work and not a Change. Extra Work may be declined by the Contractor or may, upon agreement between the parties, be undertaken as Extra Work;

- (q) "Payment Certifier" is the person or entity identified as such in the Contract responsible for the issuance of certificates of payment;
- (r) "Place of Work" means the designated site or location where the Work products are to be finally or permanently constructed or installed;
- (s) "Project Manager" is the person or entity engaged by the City and identified as such in the Contract;
- (t) "Substantial Performance" means the Work, or a substantial part of it, is ready for use or is being used for the purpose intended;
- (u) "Total Performance" means the date of the City's acceptance of the Work in writing as fully performed according to the Contract Documents; and
- (v) "Work" means and includes anything and everything required to be done for the fulfillment and completion of this Contract.

2. THE WORK

- 2.1 The Contractor will perform all Work and provide all labour, equipment and material and do all things strictly as required by the Contract Documents, including without limitation the scope of work and drawings specified in Appendix 2 and Appendix 2-A.
- 2.2 The Contractor will commence the Work on or before <<insert date here>>. The Contractor will proceed with the Work diligently, will perform the Work generally in accordance with the Construction Schedule as set out in Appendix 4 as required by the Contract Documents and will achieve Substantial Performance of the Work on or before <<insert date here>>. subject to the provisions of the Contract Documents for adjustments to the Contract Time.
- 2.3 Time shall be of the essence of the Contract.

3. CONTRACT DOCUMENTS

- 3.1 All of the Contract Documents shall constitute the entire Contract between the City and the Contractor.
- 3.2 The Contract supersedes all prior negotiations, representations or agreements, whether written or oral, and the Contract may be amended only in strict accordance with the provisions of the Contract Documents.
- 3.3 If there is any inconsistency or conflict between the provisions of the Contract Documents, then the Contract Documents shall govern and take precedence in the following order with this Contract taking precedence over all other Contract Documents:
 - (a) Contract;
 - (b) Addenda (if any);
 - (c) Departmental Construction Standards (if any);
 - (d) Specifications;
 - (e) Drawings; and
 - (f) all other Contract Documents.

4. CONTRACT PRICE

- 4.1 The Contract Price for the Work shall be the sum of <<insert figures here>> dollars, plus goods and services tax in the amount of <<insert figures here>> dollars, for a total Contract Price of <<insert figures here>> dollars in Canadian funds (the "Contract Price") plus any adjustments approved by the City, including any payments owing on account of Change Orders and agreed to Extra Work, approved in accordance with the provisions of the Contract Documents.
- 4.2 The Contract Price shall be the entire compensation due to the Contractor for the Work and this compensation shall cover and include all profit and all costs of supervision, labour, material, equipment, overhead, financing, and all other costs and expenses whatsoever incurred in performing the Work. The Contract Price is a firm fixed price.

5. HOLDBACKS

- 5.1 The City shall hold back 10%, or other percentage as required by the *Builders Lien Act*, S.BC 1997, c. 45, as amended (the "*Builders Lien Act*"), of any amounts due to the Contractor as a builders lien holdback.
- 5.2 In addition to other holdbacks as provided by the Contract Documents, when considering Substantial Performance, the City may hold back from payments otherwise due to the Contractor 200% of a reasonable estimate, as determined by the City's Representative, on account of deficient or Defective Work already paid for. This holdback may be held, without interest, until such deficiency or defect is remedied. The items of defect or deficiency and the amounts of related holdback shall be listed separately on the invoice.
- 5.3 If after Substantial Performance is achieved the Contractor is unable to complete any of the Work because of climatic or other conditions beyond the Contractor's reasonable control, then the City may hold back from payments otherwise due to the Contractor the amount as estimated by the City's Representative in consultation with the Contractor by which the cost to have others complete the Work exceeds the estimated Contract Price for such Work.
- 5.4 The City may, in addition to other holdbacks as provided by the Contract Documents, hold back an amount equal to any lien which has been filed with respect to the Work, plus 15% as security for costs. The City may, at its option, after five (5) days written notice to the Contractor, pay such amount into court to discharge the lien. If the lien is discharged without payment of the holdback into court, then the City shall pay such holdback to the Contractor, without interest.
- 5.5 **Holdback period of 55 days will follow the date of substantial performance.** The City will perform a court registry search on the 46th day, on a best effort basis.

6. INVOICING AND PAYMENT

- 6.1 Subject to applicable legislation, including without limitation the holdbacks referred to in above, and the provisions of the Contract Documents, the City shall make payments to the Contractor thirty (30) days after receipt of any invoice from the Contractor.

- 6.2 The Contractor shall submit invoice(s) for payment to the City, based on the completion of each phase of the Work. Any and all Extra Work as approved by the City, must be clearly identified and quantified on a separate invoice(s).
- 6.3 The invoice(s) submitted for the completion of each project phase shall be clearly itemized to the details of the phase completed or the amount of Work performed, the billing rates, show an invoice number, contractor's name, address, telephone number, reference the City's purchase order number or name and location of employee, and in an itemized manner the amount due for each phase completed, tax (if any) and a grand total. The grand total will be subject to holdbacks.
- 6.4 The payment by the City of any monthly or other payment shall not bind the City with respect to any subsequent payment or the final progress payment, but shall be taken as approximate only, and shall not mean, or be construed to mean, that the City has accepted Work that is not in accordance with the requirements of the Contract Documents, or that the Contractor is in any manner released from its obligation to comply with the Contract Documents.
- 6.5 For earlier payment, the Contractor can offer a cash discount. All payment cheques are mailed.

Invoices will be submitted by the Contractor by mail to:

Name: <<state who is authorized to approve invoices for payment>>
Address: <<state location where invoices are to be delivered>>

7. PERFORMANCE OF THE WORK

- 7.1 The Contractor will perform and provide all labour, services and other acts, and provide all equipment, machinery, water, heat, power, and facilities required for performance of the Work.
- 7.2 The Contractor will not proceed with any work that is not part of the Work, except in accordance with the Contract.
- 7.3 The Contractor will apply for and pay for all necessary permits and licenses and pay all fees required for the performance of the Work.

8. CHANGES

- 8.1 The City may, without invalidating the Contract, change the Work by adding to or deducting from the Work in which event the Construction Schedule will be adjusted.
- 8.2 The Contractor will not proceed with any Change without a written Change Order signed by the City.
- 8.3 The Contractor's overhead and profit will not be allowed on Change Orders paid for from allowances specified in the contract.
- 8.4 The value of a change in the Work shall be determined by one or more of the following methods as selected by the Consultant in consultation with the City.
- (a) by estimate and acceptance in a lump sum;

- (b) by unit prices set out in the Contract or subsequently agreed upon;
- (c) by actual cost and an allowance for overhead and profit as follows:
 - (1) Contractor's overhead and profit on expenditures from allowances, including Extra Work paid for from the contingency allowance, shall be included in the Contract Price.
 - (2) For changes in the Work not covered by a contingency allowance, the Contractor's overhead and profit shall be a maximum of ten percent (10%) of the actual cost of Work performed directly by the Contractor for a Change or part thereof.
 - (3) The Contractor will be entitled to charge a mark-up for overhead and profit equal to a maximum of five percent (5%) of the actual cost of work performed directly by a subcontractor a change or part thereof, provided, however, that where the subcontractor is a wholly owned subsidiary of the Contractor no mark-up for overhead and profit whatsoever shall be charged by the Contractor or paid by the City.
 - (4) The subcontractor's allowance for overhead and profit for a change shall be limited to a maximum of five percent (5%) of the actual cost of the Work performed by the subcontractor.
 - (5) Where the change involves the substitution of one type of product for another the actual cost of the Change, whether credit or extra, shall be the net difference in the actual cost.
 - (6) For avoidance of doubt, the Contractor's hourly labour rates stated in **Appendix [], a future Appendix** will be applicable to changes in Work without any mark-up.

9. SITE CONDITIONS

9.1 The Contractor acknowledges and agrees that:

- (a) it has had the opportunity to undertake additional examinations or subsurface investigations, or both, of the Place of Work, including any buildings or structures involved with the Work, in order to satisfy itself as to site conditions, including subsurface conditions and the impact they could have on the Work and the Contract; and
- (b) it is not entitled to any adjustment in the Contract, or to any other remuneration or damages whatsoever, in any way connected with the site conditions at the Place of Work, including subsurface conditions.

10. DOCUMENTS

10.1 The Contractor will keep one copy of the Contract, including the schedules and all drawings, specifications and shop drawings, at the Place of Work in good order and available for review by the City's Representative, and deliver a complete set to the City upon Substantial Performance of the Work.

10.2 The Contractor agrees that the City is hereby granted an unconditional and irrevocable perpetual license to reproduce and use, in whole or in part, and for any purpose or other project or work the City desires, all matters contained in or set out in the Contract including all drawings and specifications and all models furnished by the Contractor, and the Contractor agrees that the license granted by this section comprises the copyright, industrial design, trademark and all other intellectual property therein.

11. TIME

- 11.1 The Contractor will proceed diligently and complete the Work in a good and workmanlike manner and strictly in accordance with the Construction Schedule.
- 11.2 If the Contractor is delayed in the performance of the Work by any act or neglect of the City, the Construction Schedule will be extended for such time as may be agreed by the City and the Contractor, acting reasonably.
- 11.3 The Contractor will, as required by the City, provide or up-date the Construction Schedule, showing the anticipated start and completion dates and durations of the major elements of the Work. Failure or refusal to provide a Construction Schedule or up-date will be a default.
- 11.4 Time is of the essence of the Contract.

12. TAXES AND DUTIES

- 12.1 The Contractor will pay all taxes, custom duties and other charges relating to the Work, and the supply and installation of all materials and equipment included in the Work.
- 12.2 Where an exemption of taxes, custom duties or other charges is applicable to the Contract by way of the Contractor filing claims for, or cooperating fully with the City and the proper authorities in seeking to obtain such refunds, the Contractor will make such applications and provide such cooperation. Refunds that are properly due to the City and have been recovered by the Contractor will be promptly refunded to the City.

13. BUILDER'S LIENS

- 13.1 The Contractor will immediately take steps to keep the Place of Work free of any builder's liens and certificates of pending litigation and the Contractor will defend and indemnify the City from any builder's lien or certificate of pending litigation filed as a result of the Work. The Contractor will pay all costs and expenses including actual legal costs incurred by the City as a result of any builder's lien or certificate of pending litigation related to the Work.

14. CITY DIRECTIONS

- 14.1 The Contractor will in all respects complete the Work in accordance with the City's requirements and standards and to the satisfaction of the City.
- 14.2 The City's Representative may at any time and from time to time inspect the Work.
- 14.3 The Contractor will comply with all directions from the City relating to the coordination of the Work with the activities of the City or with other contractors hired by the City, should there be any.
- 14.4 The Contractor will have total control of the Work and will be solely responsible for ensuring the Work is in accordance with the requirements of the Contract.

15. INSPECTIONS

- 15.1 The Contractor will retain one or more independent contractors with the relevant professional education, skill and experience, to carry out and report upon all testing and other inspection activities necessary to confirm the Work is in accordance with the requirements of the Contract. The Contractor will promptly provide copies of such reports to the City's Representative.
- 15.2 If Work is designated for tests, inspections or approvals by authorized agencies, the Contractor will give the City's Representative reasonable notice of when the Work will be ready for review and inspection.

16. USE OF PLACE OF WORK

- 16.1 The Contractor will confine its tools, machinery, equipment and materials to limits as may be established by the City's Representative, acting reasonably.
- 16.2 The Contractor will maintain the Place of Work in a tidy condition and free from the accumulation of waste products and debris, other than that caused by the City, other contractors or their employees.
- 16.3 Prior to application for the Certificate of Total Performance, the Contractor will remove all surplus products, tools, machinery and equipment, and any waste and debris, and leave the Place of Work clean and suitable for occupancy by the City.
- 16.4 The Contractor will not have exclusive use of the Place of Work, and will undertake the Work in cooperation with the City, and other users of the Place of Work as the City may permit or direct.
- 16.5 The Contractor will protect the property adjacent to the Place of Work from damage and will hold the City harmless from any claims which may arise as a result of the Contractor's operations under the Contract, or from failure to provide such protection, or both.
- 16.6 The Contractor will protect the Work, the Place of Work, the City's property from damage and will be responsible for any damage which may arise as a result of operations under the Contract, except damage which occurs as a result of actions of the City.
- 16.7 Should any damage occur to the Work, the Place of Work, or the City's property, or all of the aforementioned, for which the Contractor is responsible, the Contractor will:
- (a) make good such damage to the Work, and
 - (b) if the City so directs, make good such damage to the City's property,
- and the Construction Schedule will be extended for such time as may be agreed by the City and the Contractor, acting reasonably.
- 16.8 The City may take possession of and use any completed portion of the Work regardless of the time for completion of the Work. Such possession or use will not be construed as final acceptance of the Work or portion.

17. SUPERVISION

- 17.1 The Contractor will provide competent supervision as is necessary to perform the Work.

18. CODES AND REGULATIONS

- 18.1 The Contractor will perform the Work in full compliance with all applicable federal, provincial and municipal enactments, codes and regulations.

19. CONTRACTOR'S WARRANTY

- 19.1 The Contractor represents, warrants and guarantees to the City that:
- (a) the Work will, in all respects, be constructed in a good and workmanlike manner;
 - (b) the Work will be constructed in accordance with all applicable laws in effect at the date of the Contract and in accordance with the best current and prevailing industry practices;
 - (c) the Work will be supplied, procured, fabricated, installed, constructed and completed in accordance with all requirements of the Contract;
 - (d) all Work will be free from defects or deficiencies arising from faulty construction, faulty material, faulty equipment, faulty installation or faulty workmanship;
 - (e) the Work as constructed will be fit for the purpose intended;
 - (f) title to all Work and all parts thereof shall be free and clear of all liens, charges, encumbrances and adverse claims whatsoever; and
 - (g) no part of the Work shall constitute an infringement of any patent, trade mark, copyright or other proprietary interest.
- 19.2 The Contractor agrees to correct any deficiency in the Work arising from faulty construction, faulty material, faulty equipment, faulty installation or faulty workmanship, which appear:
- (a) in the case of any roof, in the period of five (5) years after Substantial Performance of the Work;
 - (b) for other Work, excluding Work covered by a warranty greater than twelve (12) months, in the period of twelve (12) months after the date of Substantial Performance of the Work; and
 - (c) for other Work in the period of any warranties.
- 19.3 The Contractor shall undertake all repairs or replacements at times that will minimize interference with the City's operations.
- 19.4 Nothing contained herein limits the rights of the City in relation to recovery for latent deficiencies in the Work or otherwise limits the rights of the City at law or in equity.
- 19.5 The Contractor shall not be relieved of its warranty obligations by reason of inspection, testing or acceptance of the Work or any portion thereof, or the issuance of a Certification of Completion, or a Certificate of Total Performance, or payment to the Contractor of any money under the Contract.
- ## **20. WAIVERS**
- 20.1 The Contractor's application for the Certification of Completion shall constitute a waiver and release by the Contractor of any and all claims arising out of or relating to the Contract to the date of Substantial Performance. This waiver shall include without limitation those that

might arise from the negligence or breach of contract by the City, the City's Representative and their respective employees, agents, officers and contractors, but does not include claims made by the Contractor in writing prior to such application in accordance with the provisions of the Contract Documents and delivered to the City's Representative prior to date of Substantial Performance and still unsettled.

- 20.2 The Contractor's application for the Certificate of Total Performance shall constitute a waiver and release by the Contractor of any and all claims arising out of or relating to the Contract that have arisen between the date of Substantial Performance and the date of the Certificate of Total Performance. This waiver shall include those that might arise from the negligence or breach of contract by the City, the City's Representative, and their respective employees, agents, officers and contractors, but does not include claims by the Contractor in writing prior to such application in accordance with the provisions of the Contract Documents and delivered to the City's Representative and still unsettled.

21. SUBSTANTIAL PERFORMANCE

- 21.1 The City or its Consultant will, after receipt of a written application from the Contractor for a Certification of Completion, make an inspection and assessment of the Work and issue a Certification of Completion or if the City decides that Substantial Performance has not been achieved, consult with the Contractor and advise the Contractor of the Work required to achieve Substantial Performance.

- 21.2 Prior to making application for Substantial Performance of the Work, the Contractor shall submit to the Consultant or Owner the following:

- (a) letters of assurance for professional design and review from those professionals engaged by the Contractor under the provisions of the Contract, including applicable sealed shop drawings;
- (b) all required manufacturer's inspections, certifications, guarantees, warranties as specified in the Contract Documents;
- (c) all maintenance manuals, operating instructions, maintenance and operating tools, replacement parts or materials as specified in the Contract Documents;
- (d) certificates issued by all permit issuing authorities indicating approval of all installations, work and improvements requiring permits;
- (e) certificates issued by all testing, commissioning, cleaning, inspection authorities and associations as applicable or specified in the Contract Documents; and
- (f) all required record Drawings and as built and as-installed documents in the form specified in the Contract Documents, including the as-built Drawings.

If it is impracticable, with reasonable diligence and attention, for the Contractor to have obtained one or more of the items listed above prior to making application for Substantial Performance of the Work, then delivery of such items may be deferred until the date that is 30 days following Substantial Performance of the Work.

- 21.3 Together with its request or application for the Certificate of Completion of the Work, the Contractor shall provide to the Consultant and the Owner the following:
- (a) a sworn declaration in a form acceptable to the City Representative that all amounts relating to the Work, due and owing as of the end of the month covered by the invoice to third parties including all subcontractors and suppliers, have been paid;

- (b) a current clearance letter from Workers' Compensation Board confirming that the Contractor is in good standing with and that all required remittances and assessments have been made to the Workers' Compensation Board;
 - (c) a statement compiling and reconciling all Change Orders and Change Directives; and
 - (d) any other documents to be submitted by the Contractor as specified in the Contract Documents or reasonably required by the Consultant or the Owner.
- 21.4 The City shall pay any builder's lien holdback as required by the *Builders Lien Act*, or on such other date as required by law, but the City may hold back the amounts for any deficiencies or filed builder's liens.
- 21.5 The contract administrator - IRC Building Sciences Group shall be the payment certifier responsible for payment certification for the Contractor under the *Builders Lien Act*. The Contractor shall be the person responsible for payment certification for all subcontractors, including the subcontractors, as required under the *Builders Lien Act*.

22. TOTAL PERFORMANCE

- 22.1 Before applying for a Certificate of Total Performance, the Contractor will provide to the City the following:
- (a) complete sets of digital drawings and specifications, in reproducible form, showing the as-built Work;
 - (b) complete sets of maintenance manuals for any and all equipment comprised in the Work; and
 - (c) the results of quality control testing by the Contractor.
- 22.2 The Contractor may apply for a Certificate of Total Performance and the procedure and requirements for the issuance of the Certificate of Total Performance shall include the provision by the Contractor of the sworn declaration and Workers' Compensation Board compliance documentation.

23. WORKERS' COMPENSATION BOARD AND OCCUPATIONAL HEALTH AND SAFETY

- 23.1 The Contractor agrees that it shall, at its own expense, procure and carry, or cause to be procured, carried and paid for, full Workers' Compensation Board coverage for itself and all workers, employees, servants and others engaged in or upon any work or service which is the subject of this Contract. The Contractor agrees that the City has the unfettered right to set off the amount of the unpaid premiums and assessments for the Workers' Compensation Board coverage against any monies owing by the City to the Contractor. The City shall have the right to withhold payment under this Contract until the Workers' Compensation Board premiums, assessments or penalties in respect of the Work done or service performed in fulfilling this Contract have been paid in full.
- 23.2 The Contractor shall provide the City with the Contractor's Workers' Compensation Board registration number and a letter from the Workers' Compensation Board confirming that the Contractor is registered in good standing with the Workers' Compensation Board and that all assessments have been paid to the date thereof prior to the City having any obligations to pay monies under this Contract.

- 23.3 Without limiting the generality of any other indemnities granted by the Contractor in this Contract, the Contractor shall indemnify and hold harmless the City, its elected and appointed officials, employees and agents, from all manner of claims, demands, costs, losses, penalties and proceedings (including all actual legal costs) arising out of or in any way related to unpaid Workers' Compensation Board assessments owing from any person or corporation engaged in the performance of this Contract or arising out of or in any way related to the failure to observe safety rules, regulations and practices of the Workers' Compensation Board, including penalties levied by the Workers' Compensation Board.
- 23.4 The Contractor agrees that it is the prime contractor for the Work as defined in the *Workers Compensation Act*, R.S.B.C. 1996, c. 492 as amended and will ensure compliance with the *Workers Compensation Act* and Regulations in respect of the workplace. Without limiting its responsibilities under the legislation, the Contractor will coordinate the activities of employers, workers and other persons at the workplace relating to occupational health and safety. The Contractor shall have a safety program acceptable to the Workers' Compensation Board, shall provide first aid services, and shall ensure that all Workers' Compensation Board safety rules and regulations are observed during the performance of this Contract, not only by the Contractor, but by all sub-contractors, workers, material personnel and others engaged by the Contractor in the performance of this Contract. The Prime Contractor shall appoint a qualified coordinator for the purpose of ensuring the coordination of health and safety activities for the workplace. Prior to commencement of Construction, the Contractor shall complete and file a "Construction Notice of Project" with the Workers' Compensation Board and shall provide a copy of the same to the City confirming that the Contractor shall be the prime contractor responsible for coordination of safety and health under Part 3 of the *Workers' Compensation Act* and Part 20 of the WCB Occupational Health and Safety Regulations. That person will be the person so identified in this Contract, and the Contractor will advise the City immediately in writing if the name or contact number of the qualified coordinator changes.
- 23.5 The Contractor will ensure compliance with and conform to all health and safety laws, by-laws or regulations of the Province of British Columbia, including without limitation any regulations requiring installation or adoption of safety devices or appliances.
- 23.6 The Contractor shall fulfill all its duties, obligations, and responsibilities in such a manner that it ensures the safety of the public and in accordance with the safety regulations of the Workers' Compensation Board and shall install signs and barriers as required to ensure the safety of the public and of its employees in the use of the City facilities.
- 23.7 The Contractor understands and undertakes to comply with all the Workers' Compensation Board Occupational Health and Safety Regulations for hazardous materials and substances, and in particular with the "Workplace Hazardous Materials Information System (WHMIS)" Regulations. All "Material Safety Data Sheets (MSDS)" shall be shipped along with the goods, materials, products and any future MSDS updates shall be forwarded.

24. INSURANCE

- 24.1 The Contractor will obtain and carry, in forms and with insurers satisfactory to the City:
- (a) commercial general liability insurance in a wrap up form with a limit of five million (\$5,000,000) dollars inclusive per occurrence for bodily injury, death and damage to property;

- (b) the insurance shall include the Contractor, the City, the project manager, all contractors, subcontractors, suppliers and tradesmen contributing to the Work;
- (c) the insurance shall preclude subrogation claims by the insurer against anyone insured hereunder;
- (d) the insurance shall include coverage for:
 - broad form products and completed operations,
 - City's and contractor's protective liability,
 - contractor's contingent liability,
 - blanket written contractual,
 - contingent employer's liability,
 - personal injury liability,
 - non-owned automobile,
 - cross liability,
 - employees as additional insured's, and
 - broad form property damage;

and where such further risk exists:

- shoring, blasting, excavating, underpinning, demolition, removal, pile-driving and caisson work, work below ground surface, tunnelling and grading, as applicable, and
- operation of attached machinery.
- (e) product and completed operations liability insurance, to remain in full force and effect for a period of not less than twelve (12) months following completion of the Work;
- (f) course of construction insurance against "all risks" of physical loss or damage, and shall extend to cover all materials, property, structures and equipment while in transit or storage and during construction, erection, installation and testing, but such insurance shall not include coverage for the Contractor's equipment of any description. Such insurance shall be maintained until Substantial Performance of the Work;
- (g) Automobile Liability insurance on all vehicles owned, operated or licensed in the name of the Contractor in an amount not less than less three million (\$3,000,000 dollars);
 - (i) the insurance shall include as an insured, each contractor and subcontractor, project manager, architect and engineer who is engaged in the Work; and
 - (ii) the insurance will contain a waiver of the insurer's rights of subrogation against all insured except where a loss is deemed to have been caused by or resulting from any error in design or any other professional error or omission.

24.2 The Contractor will provide proof of the required insurance coverage prior to commencing the Work. Such proof will be in the form of a City of Surrey certificate of insurance.

24.3 The Contractor acknowledges that any requirement or advice by the City as to the amount of coverage under any policy of insurance will not constitute a representation by the City that the amount required is adequate and the Contractor acknowledges and agrees that it is solely responsible for obtaining and maintaining policies of insurance in adequate amounts.

- 24.4 If requested to do so, the Contractor will provide the City with a copy of insurance policies relating to the Work.

25. INDEMNIFICATION

- 25.1 The Contractor shall indemnify and hold harmless the City, its elected officials, its officers, agents and employees (collectively the "Indemnitees") from and against claims, demands, losses, costs, damages, actions, suits or proceedings by third parties that arise out of, or are attributable to, any act or omission or alleged act or omission of the Contractor, the Contractor's agents, employees or subcontractors or suppliers in performance of the Contract.
- 25.2 The City shall indemnify and hold harmless the Contractor, its agents and employees from and against claims, demands, losses, costs, damages, actions, suits, or proceedings arising out of or which are attributable to a lack of or defect in title or an alleged lack of or defect in title to the Place of Work.

26. REJECTED WORK

- 26.1 Work that is defective ("Defective Work"), whether the result of poor design, poor workmanship, use of defective materials or damage through carelessness or other acts, and whether incorporated in the Work or not, which has been rejected by the City as failing to conform to the Contract will be removed promptly by the Contractor and replaced and re-executed promptly and properly at the Contractor's expense.

27. DEFAULT

- 27.1 If the Contractor:
- (a) is adjudged bankrupt, makes a general assignment for the benefit of creditors, or a receiver is appointed on account of its insolvency;
 - (b) fails to supply competent supervision, properly skilled workers or proper materials;
 - (c) fails to make prompt payment to its contractors, suppliers or workers;
 - (d) fails to observe, or breaches the provisions of the Contract;
 - (e) fails to remove and replace Defective Work;
 - (f) abandons the Work; or
 - (g) fails to adhere to the Construction Schedule;

the Contractor is in default of the Contract and the City may give the Contractor written notice to remedy such default. If the Contractor does not commence correction of such default within five (5) business days of receiving such notice and diligently pursue correction of such default, the City may suspend the Work or terminate the Contract, without prejudice to any other right or remedy the City may have.

- 27.2 The parties agree that if the City terminates the Contract under the conditions set out above, the City shall pay the Contractor:
- (a) for all Work performed, plus reimbursement for expenditures made on account of the remaining Work, but shall not pay for profit and overhead on account of the remaining Work or any additional costs incurred because of the termination.

- 27.3 If the City terminates the Contract, the City may:
- (a) take possession of the Work and materials, and utilize the Contractor's machinery and equipment at the Place of Work to the extent third party rights are not impaired, and bring the Work to completion by whatever method the City may deem expedient; and
 - (b) upon completion of the Work, charge the Contractor the full cost of completing the Work, as certified by the City's Representative, including remedying any deficiencies in the Work.

28. CORRECTION BY CITY

- 28.1 In addition to the right of termination, if the Contractor fails to comply with a provision of the Contract, including failure to remove and replace Defective Work, the City may, without prejudice to any other remedy it may have, correct such default and charge the Contractor the full cost of correcting the default.

29. DISPUTE RESOLUTION

- 29.1 The parties will make reasonable efforts to resolve any dispute, claim, or controversy arising out of this agreement or related to this agreement ("Dispute") using the dispute resolution procedures set out in this section.

Negotiation

The parties will make reasonable efforts to resolve any Dispute by amicable negotiations and will provide frank, candid and timely disclosure of all relevant facts, information and documents to facilitate negotiations.

Mediation

If all or any portion of a Dispute cannot be resolved by good faith negotiations within 30 days, either party may by notice to the other party refer the matter to mediation. Within 7 days of delivery of the notice, the parties will mutually appoint a mediator. If the parties fail to agree on the appointment of the mediator, then either party may apply to the British Columbia International Commercial Arbitration Centre for appointment of a mediator. The parties will continue to negotiate in good faith to resolve the Dispute with the assistance of the mediator. The place of mediation will be Surrey, British Columbia. Each party will equally bear the costs of the mediator and other out-of-pocket costs, and each party will bear its own costs of participating in the mediation.

Litigation

If within 90 days of the request for mediation the Dispute is not settled, or if the mediator advises that there is no reasonable possibility of the parties reaching a negotiated resolution, then either party may without further notice commence litigation.

30. ASSIGNMENT AND SUBCONTRACTS

- 30.1 The Contractor agrees to preserve and protect the rights of the parties under the Contract with respect to Work to be performed under subcontract and to:

- (a) enter into contracts or written agreements with subcontractors to require them to perform their work in accordance with and subject to the terms and conditions of the Contract Documents; and
 - (b) be as fully responsible to the City for acts and omissions of subcontractors and of persons directly or indirectly employed by them as for acts and omissions of persons directly employed by them. The Contractor agrees that he will incorporate the terms and conditions of the Contract Documents into all subcontract agreements entered into with subcontractors.
- 30.2 The Contractor agrees to employ those subcontractors proposed by in writing and accepted by the City at the signing of the Contract. The Contractor shall not, without the written consent of the City, change a subcontractor who has been engaged in accordance with the Contract.
- 30.3 The City may, for reasonable cause, object to the use of a proposed subcontractor and require the Contractor to employ one of the other subcontract tenderers.
- 30.4 In the event that the City requires a Change from a proposed subcontractor, the Contract Price shall be adjusted by the difference in cost and mark-up occasioned by such required Change.
- 30.5 The Contractor shall not be required to employ as a subcontractor a person or firm to whom he may reasonably object.
- 30.6 The Contractor may, upon reasonable request and at its discretion, provide to a subcontractor information as to the percentage or quantity of the subcontractor's work which has been certified for payment.
- 30.7 Nothing contained in the Contract Documents shall create a contractual relationship between a subcontractor and the City.

31. NOTICES

- 31.1 Any notice, report or other document that either party may be required or may wish to give to the other must be in writing, unless otherwise provided for, and will be deemed to be validly given to and received by the addressee, if delivered personally, on the date of such personal delivery, if delivered by facsimile, on transmission, or it by mail, five calendar days after posting. The addresses for delivery will be as follows:

(a) The City:	City of Surrey – Planning & Development 13450 – 104 Avenue Surrey, B.C., Canada, V3T 1V8
Attention:	Lorne Anuik Project Manager Facilities Maintenance and Operations / Planning & Development
Fax:	604-599-8794
e-mail:	LAAnuik@surrey.ca

(b) The Contractor: [Insert full legal name and address]

Attention: [Insert Contractor contact name]
[Insert title]

Fax: <<Insert>>

e-mail: <<Insert>>

(c) The Contract Administrator / Payment Certifier:

IRC Building Sciences Group
250 – 21900 Westminster Highway
Richmond, B.C., V6V 0A8

Attention: Douglas Wells
Project Manager

Fax: 604-279 9644

e-mail: dwells@ircgroup.com

32. FORCE MAJEURE

32.1 Each party will be excused from performance under this Contract for any period and to the extent that it is prevented from or delayed in performing any obligations pursuant to this Contract, in whole or in part, by any Force Majeure Event. The affected party may invoke this section by promptly notifying the other party in writing of the nature and estimated duration of the suspension of the party's performance. In such event, the affected party will be excused from further performance of obligations so affected for so long as such Force Majeure Event prevails and such party continues to use its best efforts to recommence performance whenever and to whatever extent possible without delay (except that a party is not required by this Section to compromise its position with respect to or settle any labour dispute in order to satisfy its obligations hereunder). For the avoidance of doubt, nothing in this Section will affect the City's right to terminate this Contract for convenience as provided in Section 27.

32.2 For the purposes of this Contract, "Force Majeure Event" will mean the occurrence of an event or circumstance beyond the reasonable control of a party, provided that (i) the non-performing party is without fault in causing or preventing such occurrence and (ii) such occurrence cannot be circumvented through the use of commercially reasonable alternative sources, workaround plans or other means. Force Majeure Events will include acts of federal, provincial, local or foreign governmental authorities or courts, war or insurrection, civil commotion, catastrophic events, including without limitation earthquakes, catastrophic weather conditions, pandemics, fires, floods, storms or other elements of nature or acts of God, and labour disturbances that affect the party claiming force majeure.

33. NON ROAD DIESEL ENGINE EMISSION REGULATION

If you **own**, **operate**, or **hire** diesel powered equipment, Metro Vancouver's Non-Road Diesel Engine Emissions Regulation Bylaw No 1161, 2012 (the Bylaw) may impact your

business. The Bylaw came into force on January 1, 2012 and requires owners or operators to register and label Tier 0 and Tier 1 non-road diesel engines that are 25 horsepower (19kW) or greater in order to operate within Metro Vancouver. Tier 0 engines must have **90 days** of registration purchased by **December 31, 2014** or the engine(s) will be **prohibited from ever operating** in Metro Vancouver. To be fully registered an owner/operator must:

- provide required information (machine/engine/company details),
- pay fees, and
- label machines with Metro Vancouver issued registration number.

The City may, at its discretion, give preference to equipment that meets higher emission standards.

Contact Metro Vancouver staff at 604-451-6655, visit www.metrovancouver.org/nonroaddiesel or email nonroaddiesel@metrovancouver.org for more information about the Bylaw, the rebate program, and for assistance with the registration process.

34. GENERAL

- 34.1 The Contract contains the entire agreement between the City and the Contractor and may not be amended except in writing and signed by both parties.
- 34.2 All schedules and appendices attached to the Contract will be read and construed as forming part of the Contract.
- 34.3 The Contract will be interpreted in accordance with the laws of the Province of British Columbia.
- 34.4 The headings are included in the Contract for convenience only and will not be referred to in interpreting the Contract.
- 34.5 No consent or waiver by either party to or of any breach or default by the other under the Contract will be effective unless in writing, nor will such consent or waiver be relied on as consent to or waiver of any other breach or default of the same or any other obligation.
- 34.6 Each party will, at its own expense, execute and deliver all such further agreements and documents and do such acts and things as may be reasonably required to give effect to the Contract.

IN WITNESS WHEREOF the parties hereto have executed the Contract on the day and year first above written.

CITY OF SURREY

by its authorized signatory(ies):

Insert Name of Person Signing

Insert Name of Person Signing

Insert Title of Person Signing

Insert Title of Person Signing

<<INSERT FULL LEGAL NAME OF CONTRACTOR>>

by its authorized signatory(ies):

Insert Name of Person Signing

Insert Name of Person Signing

Insert Title of Person Signing

Insert Title of Person Signing

SCHEDULE B – APPENDIX 1 SPECIAL PROVISIONS

S.P.1 Definitions

In these Special Provisions, unless the context otherwise requires,

“Section” means section of the Specifications or the Conditions of Contract.

“Item” means item of Fees and Payments – Schedule C – Form of Quotation.

S.P.2 Scope of Work

The Contractor will perform and provide the following services or Work:

(a) Supply of all labour, supervision, materials, plant, equipment, layout, survey, permits, inspections, and other related services to complete the Bridgeview Community Centre Roof Replacement as noted in the drawings, complete with specifications. Furnish certificates confirming work conforms to requirements of Authorities having jurisdiction.

The Work will be undertaken at the Place of Work, as follows:

11475 126A Street, Surrey, B.C., V3V 5G8

The detailed scope of work is as described on the Contract Drawings (Appendix 2A), Special Provisions (Appendix 1), and Supplementary Specifications (Project) (Appendix 2).

The lack of and/or omission of detailed specifications does not minimize the acceptable levels of service and only the best commercial practices are acceptable.

S.P.3 Contract Time

The Work will be performed and completed according to the Construction Schedule as agreed to by the City, and as amended from time to time. Sufficient workers, materials, equipment, appliances, and services are to be kept on site at all times to maintain the scheduled completion of the Work. It further understood and agreed upon and made part of the Contract that the Work must be begun, performed, and completed in accordance with this schedule by the Contractor and if the Contractor fails to begin, perform without interruption, and complete the Work as required by this Contract, the Contractor may be declared in default of this Contract. If the Work is not substantially complete within the time required in Appendix 4 of this Contract, the Contractor shall pay to the City the following:

- (a) Any expenses or damages which are incurred by the City as a result of the Contractor's failure to complete the work under this Contract within the time specified; and/or
- (b) The sum of \$250.00 for each and every day after the date of Substantial Completion until the date of actual Substantial Completion. If the Work is not finally completed within the time required in the preceding Section 2 of the Contract, the Contractor will pay to the City, the sum of \$100.00 for each and every day after the date of Final Completion until the date of actual Final Completion.

S.P.4 Contract Administrator / Payment Certifier

The Contract Administrator / Payment Certifier is IRC Building Sciences Group, 280 – 21900 Westminster Highway, Richmond, B.C., V6V 0A8, Telephone: 604-295 8070 x 7236 Fax: 604-279 9644 E-mail: dwells@ircgroup.com, represented by: Douglas Wells, Project Manager.

S.P.5 Consultant

The Consultant is IRC Building Sciences Group, 280 – 21900 Westminster Highway, Richmond, B.C., V6V 0A8, Telephone: 604-295 8070 x 7236 Fax: 604-279 9644 E-mail: dwells@ircgroup.com, represented by: Douglas Wells, Project Manager.

S.P.6 Project Manager

The Project Manager is Lorne Anuik, Project Manager, Facilities Maintenance and Operations, Planning & Development, City of Surrey, Telephone: 604-590 7205 Fax: 604-599-8794 E-mail: LAAnuik@surrey.ca.

S.P.7 Coordination

Coordinate your work with all required trade contractors, City forces, suppliers to maximize overall productivity and to facilitate the completion of the project overall. All trades will include for a foreman or senior representative to attend site coordination meetings discussing schedule, safety, crew counts, materials delivery and work conflicts. These meetings are to be schedule at the convenience of the City.

While it is not an all-inclusive list of potential coordination requirements, the following is a list of known activities that the Contractor should be aware when planning for coordination.

Other contractors

The Contractor will be required to coordinate their schedule and work program with the following construction activities, which will be tendered to other contractors by the City and will be construction concurrent with the Contract.

“NONE”

S.P.8 Availability of Place of Work

The Place of Work is available for the immediate commencement of the Work. The anticipated start date is July 18, 2016. The Contractor will schedule the Work accordingly.

S.P.9 Quality Assurance

Work covered shall be performed by a single firm experienced in renovation/construction services of a similar nature and scope. Subject to approval of the City, the Contractor may subcontract any work to be performed under this Contract. However, the election to subcontract work shall not relieve the Contractor from responsibility or liability which it has assumed under this Contract and the Contractor shall remain liable to the same extent that

its liability would attach, as if the Work had been performed by the Contractor's own employees.

All materials and hardware to be supplied by the Contractor, which are not specifically described herein, shall be of suitable construction, composition and quality to achieve their intended function.

S.P.10 Job Conditions

The Contractor shall be familiar with the project location and how the existing conditions will affect their work. This is so that no misunderstanding may arise afterwards as to the character or as to the extent of the work to be done; likewise, in order to advise and acquaint themselves with all precautions to be taken in order to avoid injury to person or property of another. No additional compensation will be granted because of any unusual difficulties or City's special requests that may be encountered in the execution of any portion of the work.

S.P.11 Environmental Protection

The Contractor warrants that it will not produce or discharge in any manner or form, directly or indirectly, chemicals or toxic substances into the environment and that all equipment used will not pose a hazard to, or harm or adversely affect anyone coming into contact with it and covenants and agrees to provide the City with an environmental plan (where applicable), acceptable to the City, which plan shall outline the procedures to be followed by the Contractor to prevent the production or discharge of chemicals or toxic substances into the environment and the actions to be taken should the discharge occur.

The Contractor will be responsible to take all necessary measures to comply with the requirements of the Federal and Provincial environmental protection agencies, City by-laws, the *Waste Management Act*, R.S.B.C. 1996, c. 482, as amended and any other applicable acts and regulations in respect to air, earth and water pollutants.

The Contractor will report to the City immediately if any hazardous or toxic materials are found or discovered. Such materials are to be left untouched and the area is to be marked and cordoned off to prevent any access to the workers and the public.

S.P.12 Safety

The Contractor shall be solely responsible for construction safety at the Place of Work as and to the extent required by applicable construction safety legislation, regulations and codes, including *Workers Compensation Act* and applicable regulations, and by good construction practice.

Safety – Fall Protection - The Contractor and any trade contractor shall include for all fall protection equipment and requirements necessary to complete scope of Work in a safe manner and in compliance with the site safety plan, which includes: Fall protection must be worn when working at a height over 6 ft. or as the hazards present necessity.

Safety – On-Site Hazards and Utilities Present – Before commencing any Work at the Place of Work, the Contractor is to make themselves aware of any and all on-site hazards including but not limited to underground and overhead utilities near to the Work area and to

take every precaution necessary to eliminate any risk that may exist. If an on-site hazard exists that is causing or may cause injury to any person(s), the Contractor is to take immediate action to mitigate risk and damage, and then notify the City and the City's consultant (if any).

S.P.13 Traffic Control

At all times during the Work or activities included in this specification, the Contractor shall take full responsibility to ensure that traffic control is carried out in accordance with City Bylaws and the Ministry of Transportation and Highways regulations for work performed on provincial highways and including their right-of ways, as applicable.

The Contractor at his expense, is to provide:

- all necessary signs, materials, barricades, and other warning devices;
- qualified and trained Traffic Control Personnel for traffic flagging services; and,
- in some cases, equipment such as flashing arrow boards, cones, etc.

These are specified in accordance with the Province of British Columbia, Ministry of Transportation & Highways' General Specifications for Highway Jurisdiction, Section 194 (Appendix A), and the Traffic control Manual for Work on Roadways, 1995 and the Traffic Control Manual for Work on Roadways, Field and Office Edition, (1999 Update). Please visit

http://www.th.gov.bc.ca/trafficcontrol/tc_guidelines1.htm for the latest updates.

Additional services to ensure safety may be required at the discretion of the City. The Contractor is to provide such additional services as directed at no extra cost.

S.P.14 Construction Access and Traffic Maintenance

The designated access to and from the construction site must be approved by the City. All construction traffic must use the designated access including heavy equipment, trucks and workers' personal vehicles.

Construction access to the Place of Work areas within existing building for workers and delivery of materials shall be designated by the City. No other existing exits or entrances shall be used by workers for access or for delivery of materials.

The Contractor shall conduct construction operations with minimum interference to adjacent roadways, sidewalks and access facilities in general and shall keep such areas free from materials, debris and equipment at all times. The Contractor shall not close or obstruct existing roadways, sidewalks, parking areas or delivery points and shall not place or store materials or park cars on same.

The Contractor shall cooperate in all ways with the City in all matters concerning necessary interference with normal operation of the Place of Work. Minimizing disruption of normal facility/site operation and vehicular movements at the Place of Work is an essential requirement of the Contract.

The Contractor shall:

- (a) Include project phasing strategies in the Construction Schedule to minimize traffic disruption on the Place of Work
- (b) Provide one (1) week minimum notice to the City, previous to any disruption or alteration of access to the Place of Work. The Contractor shall provide all signs, pylons and flag persons necessary to direct vehicular traffic around work in progress.
- (c) The Contractor shall maintain access to existing fire hydrants and Siamese connections and shall keep entrances and exits to existing and adjacent buildings clear at all times.

S.P.15 Proposed Substitutions

Acceptance of material specifications that are an equal or higher level of quality compared to the material specified will not be unreasonably withheld.
Quotations for equipment substitutions to be made as separate line items and as additive or deductive alternates to the base equipment bid.

Evaluation of the substitutions to be made solely by the City whose decision shall be final.

S.P.16 Manuals

Installation and Operator's manuals must accompany equipment delivered. Electrical, Mechanical, and Plumbing booklets shall be provided to the City, as per the Specifications.

All manual(s) must be furnished prior to payment and delivered to the City. Failure to deliver all manual(s) that are ordered may result in non-payment until all manual(s) are received.

S.P.17 Hours of Work

Refer to the City of Surrey applicable bylaws for acceptable work hours.

No work is to be performed outside of these acceptable work hours without written approval from the City, and with approval by obtaining a noise variance if required.

All work shall conform to local bylaws, including building and parking bylaws and municipal guidelines and regulations. This includes Building Bylaws and Noise Restrictions, which will apply to all work being completed. Where work or the work schedule does not permit compliance with the Bylaws, the Contractor shall request permission from the City for special exemptions from the bylaws. No extra compensation, in any form (e.g. overtime, etc.) will be given without prior written approval from the City.

S.P.18 Damage

The Contractor will be responsible for any and all damages to property or persons and for any losses or costs to repair or remedy the Works as a result of any negligent act or omission, or misconduct in the performance of the Works and its subcontractor's Work and shall indemnify and hold harmless the City, its officers, agents and employees from all suits, claims, actions or damages of any nature whatsoever resulting therefrom unless such loss, damage, injury or loss results from or arises out of the error, omission and/or negligent acts

of the City, or its officers, for subsequent correction of any such error, omission and/or negligent acts or of its liability for loss or damage resulting therefrom. Except as to professional liability, these indemnities shall not be limited by the listing of any insurance coverage.

S.P.19 Worksite Conduct

All labourers and workers, while working in and around the Bridgeview Community Centre, 11475 126A Street, Surrey, B.C., V3W 2P1, Surrey, British Columbia, and the City facilities, shall act in a professional manner. The Contractor is to enforce proper discipline and decorum among all labourers and workers on the worksite and is to control, among other things: 1) noise, including music; 2) the use of offensive language; 3) smoking or drinking of alcoholic beverages on the worksite; 4) physical violence; 5) riding in the passenger elevators; 6) thievery; and 7) the transportation of articles or materials deemed hazardous. If the City determines, in its sole discretion, that any labourer need to be removed due to his or her failure to comply with the terms of this provision, the Contractor will remove such labourers from the worksite immediately.

Alcohol and drugs are not tolerated on this site at any time including anyone deemed to be under the influence shall be escorted off site.

S.P.20 Cleanliness and Disposal of Unwanted Materials

Continuous daily clean up of the work areas shall be performed by the Contractor and trade contractor throughout the performance of the Work and will be undertaken in accordance with the Contractor's waste management plan. Clean up of waste products and debris generated by the Contractor and any trade contractor outside of the building and on the site shall be the responsibility of the Contractor. Should the City be required to clean up the work of the Contractor or trade contractor the cost of such clean up will be recovered from the Contractor.

The Contractor is solely responsible for any and all damages done or regulations violated in the disposal of waste materials and for any other actions, which the Contractor performs.

The Contractor warrants that it will produce or discharge in any manner or form, directly or indirectly, chemicals or toxic substances into the environment and that all equipment used will not pose a hazard to, or harm or adversely affect anyone coming into contact with it and covenants and agrees to provide the City with an environmental plan (where applicable), acceptance to the City, which plan shall outline the procedures to be followed by the Contractor to prevent the production or discharge of chemicals or toxic substances into the environment and the actions to be taken should the discharge occur.

The Contractor shall be responsible to take all necessary measures to comply with the requirements of the Federal and Provincial environmental protection agencies, City by-laws, the *Waste Management Act*, R.S.B.C. 1996, c. 482, as amended and any other applicable acts and regulations in respect to air, earth and water pollutants.

S.P.21 Accidents; Equipment Safety

Any and all accidents, regardless of how minor, involving another person, private property, or vehicle, shall be reported immediately to the Surrey R.C.M.P. and a report requested. The City shall also be contacted immediately and be provided a copy of any reports.

The Contractor shall assume all responsibility for damages to property or injuries to persons, including accidental death, attorneys fee and costs of defense which may be caused by Contractor's performance of this Contract, whether such performance be by itself, its subcontractor, or anyone directly or indirectly employed by Contractor or its subcontractors and whether such damage shall accrue or be discovered before or after termination of this Contract.

The Contractor's equipment operators shall maintain good safety and driving records, and use extreme caution during the performance of the Work.

S.P.22 Permits and Fees

The Contractor is to secure and pay for any additional permits, and governmental fees, licenses and inspection necessary for proper execution and completion of the Work which is customarily secured after execution of an agreement and which is legally required. The Contractor is to comply with and give notices required by Laws applicable to performance of the Work.

S.P.23 Final Completion and Payment

When the Work is finally complete and the Contractor is ready for a final inspection, the Contractor is to notify the City, in writing. Thereupon, the City will perform a final inspection of the Work. If the City confirms that the project is complete including all deficiencies, is in full accordance with this Contract and the Contractor has performed all of its obligations, is hereby entitled to submit for final payment, subject to the *Builders Lien Act*.

S.P.24 Workmanship

- (a) General: Workmanship shall be of best quality, executed by workers experienced and skilled in respective duties for which they are employed. Do not employ any unfit person or anyone unskilled in their respective duties. The City reserves the right to dismiss for site, workers deemed incompetent, careless, insubordinate or otherwise objectionable. Decisions as to quality of fitness of workmanship in cases of dispute rest solely with the City, whose decision shall be final.
- (b) Coordination: Ensure cooperation of workers in laying out work. Maintain efficient and continuous supervision.
- (c) Protection of Work in progress: The Contractor is to adequately protect Work completed or in progress. Work damaged or defaced due to failure in providing such protection is to be removed and replaced, or repaired, as directed by the City at no cost to the City.

Should any dispute arise regarding the quality of the workmanship, materials or products used in the performance of the Work, the final decision regarding the acceptable quality of the workmanship, and fitness of the materials and products rests strictly with the City.

Additionally, all Works required hereunder will be performed as promptly as possible, and in any event within the time stated by the City, and such Work will be subject to approval and acceptance of the City, but such approval and acceptance will not relieve the Contractor from the obligation to correct any incomplete, inaccurate or defective work, all of which shall be promptly remedied by the Contractor on demand, without cost to the City.

The Contract Administrator will visit the Place of Work at intervals appropriate to the progress of the Work to become familiar with the progress of the Work, the quality of the Work being provided and to determine if the Work is proceeding in general conformity with the Contract Documents.

S.P.25 VEHICLES/EQUIPMENT

The Contractor should have a sufficient number of service vehicles together with sufficient operating personnel to perform the Services. If, in the opinion of the City, whose opinion shall be final and binding, the numbers of service vehicles that the Contractor has in service are inadequate to meet the Service response times stated herein, the Contractor may be given thirty (30) calendar days notice, after which time the Contractor must provide additional vehicles to perform the Services, as directed by the City.

Contractors Vehicles/Equipment used in the performance of the Services are to be properly equipped to complete the Bridgeview Community Centre Roof Replacement. Off-road (e.g. ATV's) type of equipment may be utilized within the parks provided that they conform to WCB standards. The units should be sealed to prevent loss of waste materials while collecting & transporting garbage.

All vehicles/equipment will be kept clean, in good mechanical condition, painted to present a neat appearance, show evidence of annual safety inspections and display proper registration and license.

All Contractor's vehicles/equipment should be equipped with approved back-up alarms, multiple lite revolving/strobe lights, or other necessary warning systems, which should be maintained and in proper operating condition at all times. In the event of a breakdown, the Contractor should arrange for reserve equipment, with always the intent to maintain the schedule frequency.

Vehicles/Equipment used in the performance of the Services is to be identified on both sides with the company name and telephone number. This should be fully legible and displayed in a professional manner. The Contractor may also be required to display magnetic signs as supplied by the City, identifying the Contractor as a 'City Contractor'. This will not replace the company identification.

S.P.26 Tradesmen

All materials, roofing or otherwise, to be installed by qualified "BC licensed trades people". Roofing crew to have a minimum of sixty (60%) percent journeymen with past experience applying the products specified.

Trade certification of crew members confirming past experience may be required prior to start-up of Work as related to the laminated fiberglass shingle, modified bitumen and sheet metal flashing installation.

S.P.27 Qualifications of Contractor

Contractor represents that it has the expertise, qualifications, resources and relevant experience to supply the goods and services. Tradesman, engaged in the performance of the Work shall be qualified in accordance with the requirements of the Tradesman Qualifications Act and all pertinent licensing requirements required by the Ministry of Municipal Affairs. Specifically for the purposes of this Contract all materials, roofing or otherwise, to be installed by qualified BC licensed trades people. Roofing crew is to have a minimum of sixty (60%) percent journeymen on-site during the performance of the Work. At no time during the new roof application is there to be less than the required number of journeymen on site. Failure to maintain the required number of journeymen on site may, at the discretion of the Consultant or the City, result in a stop work order until such time as the journeymen requirements are met. Any financial loss to the Contractor as a result of a stop work order will be the responsibility of the Contractor.

S.P.28 On-Site Hazards and Utilities Present

The Contractor is to make themselves aware of any and all on-site hazards including but not limited to underground and overhead utilities in or near to the Work area and to take every precaution necessary to eliminate any risk that may exist. If an on-site hazard exists that is causing or may cause injury to any person(s), the Contractor is to take immediate action to mitigate risk and damage, and then notify the City and the City's Consultant.

*****END OF PAGE*****

**SCHEDULE B - APPENDIX 2
SUPPLEMENTARY SPECIFICATIONS – (PROJECT)**

PROJECT: Roof Replacement - Bridgeview Community Centre

PREPARED BY

CONSULTANT: IRC Building Sciences Group
#280, 21900 Westminster Highway
Richmond, BC V6V 0A8

DATED: April 19, 2016

PART 1 - GENERAL

1.1 DESCRIPTION

- .1 General Contractor to provide all labour, equipment, and materials necessary to perform to completion Work as described in these Contract Documents for:
 - .1 2016 Roof Replacement Program on designated roof areas at Bridgeview Community Centre located at 11475 126A Street, Surrey, BC, V3V 5G8.
- .2 Contract Documents to be reviewed in their entirety with all sections, including Division 1-General Requirements, to be considered interrelated and form part of this section.

1.2 PROJECT SCHEDULE

- .1 Contractor to mobilize his forces and trades to commence work on site as soon as possible after Award of Contract, weather permitting.
- .2 Substantial Completion of Work to be completed by a specified date; to be announced later in consultation with Contractor.

1.3 EXAMINATION OF DRAWINGS, SPECIFICATIONS, AND WORKSITE

- .1 Carefully examine and study all Bid Requirements together with existing site conditions and any other necessary data or conditions that may affect performance of Work in order to determine full extent of Work.
 - .1 Under no circumstances will any claims be allowed against Owner resulting from failure to ascertain full extent of Work herein described, specified, or implied.
- .2 Contractor to verify to own satisfaction that existing site conditions, roof components, and measurements are accurately reported in Bid Requirements. Obtain or check all measurements and dimensions at worksite as may be necessary and required for performance of Work.
- .3 Promptly report in writing any discrepancies, errors, conflicts, or omissions to Consultant when discovered and prior to Bid Closing.
 - .1 Drawings, specifications, and schedules are complementary to each other; what is called for by one to be binding as if called for by all.
 - .2 Should any discrepancy appear between documents leaving doubt as to intent or meaning, most stringent requirement shall govern unless directed otherwise in writing by Consultant.
- .4 Bid submission to be based on products, equipment, and/or suppliers named and identified as approved or accepted in technical specifications and drawings.
 - .1 Bid Documents constitute acceptable roofing installations.
 - .2 No deviation from specifications, drawings, or approved shop drawings allowed without prior written approval by Consultant, and if applicable by Manufacturer.
- .5 Unless specifically identified in Bid Requirements, any hazardous materials encountered during Work that requires specialized handling and incurs additional cost to be added to Contract Price.
- .6 Weather conditions are considered incidental to Work and will not be considered additional to Bid Price.

1.4 BID PRICING

- .1 Bid Pricing: Provide a breakdown of Stipulated Lump Sum Price as itemized and indicated on Bid Form under Appendix “C” - Stipulated Price Breakdown.
 - .1 Replacement of Roof Areas 1.1 and 2.1: Price to perform new replacement roof system installation over top of existing membrane with a new modified bitumen membrane roofing system in accordance with Section 07 52 10.
- .2 Provide Appendix “E” – List of Separate Prices. Provide a breakdown of Stipulated Lump Sum Price as itemized and indicated on Bid Form under Appendix “E” - Stipulated Price Breakdown.
 - .1 Replacement of Skylight on Roof Area 2.1: Separate Price to replace the skylight system in accordance with Sections 08 63 00 and 08 80 00.
- .3 Provide Appendix “F” – List of Unit Prices. Items to be performed as required and endorsed by Consultant and Owner where exposed during performance of Work or where directed on site by Consultant, and added to Contract Price.
 - .1 Wood Block Replacement: Price to add to Contract to supply and install new matching wood blocking as required to replace any damaged and/or deteriorated existing wood blocking, per board foot. Replacement of wood blocking to be endorsed by QA Observer.
 - .2 Wood Decking Replacement: Price to add to Contract to supply and install new matching wood decking as required to replace any damaged and/or deteriorated existing wood decking, per square foot. Replacement of wood decking to be endorsed by QA Observer.

1.5 OWNER OCCUPANCY

- .1 Owner will occupy premises during entire construction period for execution of normal operations.
- .2 Cooperate with Owner in scheduling operations to minimize conflict and to facilitate Owner usage.

1.6 CONTRACTOR USE OF PREMISES

- .1 Contractor to limit use of premises for Work, for storage and access.
- .2 Coordinate use of premises under direction of Owner and Consultant.
- .3 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.

1.7 GENERAL SITE REQUIREMENTS

- .1 Temporary Barriers, enclosures and signage will be highly enforced given use of property.
- .2 Contractor to ensure safety and proper execution of public routing; ensuring temporary access to fire exists if and when they are affected as part of Work.
- .3 Obtain Construction/Building Permit and sidewalk/roadway occupation permits as required by local municipality.
- .4 Determine nature and extent of all site services above and below grade prior to commencement of Work.

- .5 Coordination of trades will be responsibility of Contractor to ensure work is completed as soon as possible. Provide winter protection and heating as required to perform Work if required and as specified.
- .6 Supply, set-up, maintain and remove scaffolding, man-lift platforms and/or swing-stages during performance of Work as required to access work areas. If scaffolding is to be used, Contractor to provide complete shop drawings bearing seal of a Professional Engineer, licensed to practice in Place of Work. Work to include review and approval of installed scaffolding by Designer. Allowance should be made for access to all elevations of building.
- .7 No public access to Work area to be allowed. Ensure access to fire exits are maintained and hoarded through Work area. Pedestrian access along sidewalks must be maintained as per Owner's requirements. No areas of access to or around building are to be restricted without approval of Owner.
- .8 Install temporary protection at all locations of Work, as required to ensure safe, clean, orderly removal and disposal work, and to provide protection for all interior and exterior building components, vehicles, pedestrians and occupants.
- .9 Provide temporary support to existing structural and cladding components during performance of work if required.
- .10 Install temporary protection for all materials and building components, which have been exposed during demolition/removals as specified.
- .11 Dispose of all materials at landfill site authorized by authorities having jurisdiction.

1.8 PROTECTION OF ROOFS

- .1 Protect all roof areas within area of Work and where equipment or materials are stored. Do not store equipment or materials directly on roof surface.
- .2 Protect existing roof systems to remain against damage from traffic generated by new Work.
- .3 Protection of existing and newly installed roof membranes to use sheets of 25mm (1") expanded polystyrene insulation cover with 13mm (0.5") plywood.

1.9 SCOPE OF WORK: LOW SLOPE ROOFING (BASE BID)

- .1 On Roof Areas 1.1 and 2.1: Remove existing components, projection and perimeter flashings, and old appurtenances down to existing membrane in preparation for installation of a new roof system in accordance with Section 07 52 10.
 - .1 Examine surface of exposed membrane for damage and deterioration. Install new compatible materials where required to repair and restore components.
 - .2 Install one continuous flat layer of 13mm (0.5") laminated mineral fiber insulation, mechanically attached.
 - .3 Install one (1) ply of self adhered or torch applied, modified bitumen base sheet flashings at perimeters, curbs, and projections.
 - .4 Install one (1) ply, granular modified bitumen cap sheet membrane, torch applied.
 - .5 Install one (1) ply, granular modified bitumen cap sheet flashings, torch applied.
 - .6 Install new metal flashings where required in accordance with Section 07 62 00.
 - .7 Install new sealants where required in accordance with Section 07 92 00.

1.10 SCOPE OF WORK: SKYLIGHT REPLACEMENT (BASE BID)

- .1 On Roof Area 2.1: Remove and dispose of existing skylight and supply and install a new sloped metal-frame skylight as per Section 08 63 00 and 08 80 00 and IRC drawings and details. Provide engineered shop drawings for approval.

1.11 CLEANING

- .1 Perform daily and final clean-up of work area and areas surrounding site.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION - 01 11 00

PART 1 - GENERAL

1.1 SECTION INCLUDES

- .1 Barriers
- .2 Environmental Controls
- .3 Fall Arrest
- .4 Traffic Controls
- .5 Fire Routes

1.2 REFERENCES

- .1 Canadian General Standards Board (CGSB)
 - .1 CGSB 1.189M – Primer, Alkyd, Wood, Exterior
 - .2 CGSB 1.59 – Alkyd Exterior Gloss Enamel
- .2 Canadian Standards Association (CSA)
 - .1 CSA O121M – Douglas Fir Plywood
- .3 Occupational Health and Safety Act and regulations for Construction Projects.
- .4 Canadian Standards Association (CSA), CSA S350-M, Code of Practice for Safety in Demolition of Structures.
- .5 Comply with National Building Code of Canada, Part 8, "Safety Measures at Construction and Demolition Sites", and Provincial requirements.

1.3 INSTALLATION AND REMOVAL

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

1.4 WORK AREA HOARDING

- .1 Erect temporary site enclosures where required using:
 - .1 38 x 89 mm (2" x 4") construction grade lumber framing at 600 mm (2') centres and 1200 x 2400 x 13 mm (4' x 8' x 1/2") exterior grade fir plywood to CSA O121. Apply plywood panels vertically flush and butt jointed.
 - .2 1800 mm (6') high interlocking steel fence, with openings no greater than 38 mm (1.5")
- .2 Where required provide a minimum of one lockable truck entrance gate and at least one pedestrian door as directed and conforming to applicable traffic restrictions on adjacent streets. Equip gates with locks and keys.
- .3 Erect and maintain pedestrian walkways including roof and side covers, complete with signs and electrical lighting as required by law.

- .4 Paint public side of site enclosure in selected colours with one coat primer to CAN/CGSB 1.189M and one coat exterior paint to CAN/CGSB 1.59. Maintain public side of enclosure in clean condition.
- .5 Provide barriers around trees and plants designated to remain. Protect from damage by equipment and construction procedures.

1.5 COVERED HOARDING

- .1 Covered hoardings will be required when working over exits that serve as fire exits and locations where entrance or exit is required to remain open during work as stipulated by Owner.
- .2 Covered hoardings to be erected from vertical face of exit/entrance a minimum of:
 - .1 a line from top of work extending on 60° angle from vertical, or
 - .2 6000 mm (20') long.
- .3 Covered hoardings to be provided when work occurs overhead of following:
 - .1 Emergency exits
 - .2 Safe Areas
 - .3 Emergency access roads
 - .4 Entrances and exits determined by Owner to remain open during work
 - .5 Entrances and exits required to remain open to provide adequate egress in and out of building
- .4 Covered hoardings for pedestrian traffic to be constructed as follows:
 - .1 Scaffolding frames with X-bracing at 2400 mm (8') o/c;
 - .2 2x10 planks across top of frames tight together fastened to scaffolding frames;
 - .3 19 mm (3/4") plywood fastened to top of 2x10 planks;
 - .4 minimum 12 mm (1/2") plywood on 38 x 89 mm framing side walls set inside of overhead framing;
 - .5 provide and maintain lighting to a minimum of 50 lux, constructed in a fashion that will mitigate vandalism.
- .5 Covered hoardings for Access roads and Safe Areas to be designed by a Professional Engineer licensed in province for Place of Work under guidelines of provincial Occupational Health and Safety Act and with local authorities having jurisdiction.

1.6 WORKING FROM ROOF

- .1 If and when work is performed on roof, existing roof composition to be protected by following:
 - .1 minimum 25 mm (1") rigid insulation;
 - .2 6 mil polyethylene sheet, lapped at discontinuities by 300 mm (12");
 - .3 19 mm (3/4") plywood sheathing.

1.7 FALL ARREST

- .1 If building does not have an approved roof anchor system in place, supply an engineered rigging system signed and sealed by a Professional Engineer.
- .2 Provide rigging drawings showing location of anchors, life lines and primary suspension lines indicating following:
 - .1 Primary suspension line size.
 - .2 Life safety line size.
 - .3 Quantity and location of counter weights.
 - .4 Size and length of outrigger beam.
 - .5 Configuration of stages, whether bosuns chair, swing stage or tiered swing stage.
 - .6 Details indicating:
 - .1 proprietary beam saddles with anchorage
 - .2 compression fittings
 - .3 shackles or forged hooks
 - .4 protection of life lines
 - .5 size and quantity of cable clips
- .3 Where swing stage rigging is not used prepare plans indicating a location of life line tie offs.
- .4 Provide typical details indicating construction and anchorage for secure, rigid guard rails and barricades around deep excavations, open shafts, open stair wells, open edges of floors and roofs.
- .5 Conform to requirements of Occupational Health and Safety Act and regulations for Construction Projects

1.8 WEATHER ENCLOSURES

- .1 Weather to be considered incidental to work and to not be claimed as additional.
- .2 Applicable standard to be used for materials or building components when enclosures and/or heating is required to complete work.
- .3 Provide weather tight closures for, but not limited to:
 - .1 unfinished door and window openings;
 - .2 openings in floors and roofs;
 - .3 openings through walls;
 - .4 locations where daily work is not completed in a days work and components left exposed are sensitive to weather conditions;
 - .5 protection of materials used that are sensitive to weather conditions.
- .4 Design enclosures to withstand wind pressure, snow loading etc.

1.9 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.
- .3 Provide means for ventilating area if work is to occur in an interior or confined space.
- .4 Ventilate work area when it corresponds with areas used by tenants or patrons concurrently for parking or egress. If dust generation will affect tenants or patrons provide sealed enclosure with adequate ventilation for health and safety of workers.

1.10 ACCESS TO SITE

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

1.11 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.

1.12 FIRE ROUTES

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

1.13 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.

1.14 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.

END OF SECTION - 01 56 00

PART 1 - GENERAL

1.1 RELATED SECTIONS

- .1 Section 01 11 00 – Summary of Work
- .2 Section 01 56 00 – Temporary Barriers and Enclosures
- .3 Section 07 52 10 – SBS Modified Bituminous Roofing Membrane

1.2 REFERENCES

- .1 Latest edition of all listed references to apply:
 - .1 Canadian Standards Association CSA S350, Code of Practice for Safety in Demolition of Structures.
 - .2 National Building Code of Canada, Part 8, "Safety Measures at Construction and Demolition Sites", and Provincial requirements.
 - .3 Occupational Health and Safety Act and regulations for Construction Projects.
 - .4 Canadian Environmental Protection Act (CEPA), 1988.
 - .5 Canadian Environmental Assessment Act (CEAA), 1995.
 - .6 Transportation of Dangerous Goods Act (TDGA), 1992.

1.3 ASBESTOS AND DESIGNATED SUBSTANCES

- .1 Demolition of spray or trowel applied asbestos can be hazardous to health. Notify Consultant if material resembling spray or trowel applied asbestos is encountered on site. Stop work and do not proceed with further removal until written instructions have been received from Consultant.
- .2 Contractor responsible for co-ordination of abatement procedures for all Asbestos Containing Materials (ACM) pertinent to successful performance of Work. All ACM work to be in compliance with current provincial asbestos abatement regulations for Place of Work.
 - .1 ACM removal and disposal work identified in Contract Documents to be included in Bid Pricing as specified in Scope of Work.
 - .2 Additional ACM discoveries requiring removal and disposal to be paid for by Owner and preapproved by Consultant as an extra cost to be added to Contract.

1.4 STORAGE AND PROTECTION

- .1 Protect existing items designated to remain and items designated for salvage. In event of damage to such items, immediately replace or make repairs to approval of Consultant and at no cost to Owner.
- .2 In all circumstances, ensure that demolition work does not adversely affect adjacent watercourses, groundwater and wildlife, or contribute to excess air and noise pollution.
- .3 Protect trees, plants and foliage on site and adjacent properties where indicated.

1.5 EXISTING CONDITIONS

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

- .2 Record and discuss with Consultant any deviations from existing assumed conditions as indicated by drawings and/or specifications.

1.6 REGULATORY REQUIREMENTS

- .1 Ensure all work is performed in compliance with CEPA, CEAA, TDGA, and all applicable provincial regulations.

1.7 NOTICE

- .1 Provide a minimum twenty-four (24) hour notice to Consultant and Owner prior to proceeding with any work that may disrupt building access or services.

PART 2 - NOT USED

PART 3 - EXECUTION

3.1 PREPARATION

- .1 Examine site with Consultant and verify extent and location of items designated for removal, disposal, recycling, salvage and items to remain. Removal of HVAC units require confirmation by Owner's Representative.
- .2 Locate and protect utilities where applicable. Notify and obtain approval of utility companies before starting demolition.

3.2 GENERAL PROTECTION

- .1 Prevent movement, settlement, or other damage to adjacent structures, utilities, and parts of building to remain in place. Provide engineered bracing and shoring as required.
- .2 Minimize noise, dust, and inconvenience to occupants.
- .3 Protect existing building systems, services and equipment.
- .4 Provide temporary dust screens, covers, railings, supports and other protection as required.
- .5 Provide required signage, barricades, hoarding, overhead protection and temporary egress.
- .6 Support affected structure or building components and if safety of structure being demolished or adjacent structures or services appears to be endangered, take preventative measures and then cease operations and notify Consultant immediately.
- .7 Ensure that demolition work does not adversely affect adjacent watercourses, groundwater and wildlife, or contribute to excess air and noise pollution.
- .8 Do not dispose of waste or volatile materials such as: mineral spirits, oil, petroleum based lubricants, or toxic cleaning solutions into watercourses, storm or sanitary sewers. Ensure proper disposal procedures are maintained throughout project.
- .9 Do not pump water containing suspended materials into watercourses, storm or sanitary sewers, or onto adjacent properties.
- .10 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authorities.

- .11 Prevent extraneous materials from contaminating air beyond application area, by providing temporary enclosures during demolition work.
- .12 Cover or wet down dry materials and waste to prevent blowing dust and debris. Control dust on all temporary roads.

3.3 DEMOLITION SALVAGE AND DISPOSAL

- .1 Remove parts of existing structure or roof system to permit repairs or new installation. Sort materials into appropriate piles for recycling and or reuse.
- .2 Carry in Base Bid Price all costs to salvage, protect from harm, and re-use following components, unless indicated otherwise elsewhere in specifications:
 - .1 Existing skylights, mechanical equipment, cladding, stairs and ladders, satellite and communications equipment, electrical lines, and service lines, etc.
- .3 Refer to drawings and specifications for items identified for reuse or salvage, if applicable.
- .4 Remove items to be reused, store in a protected location, and reinstall under appropriate section of specification.
- .5 Trim edges of partially demolished building elements to suit future use.
- .6 Include for disposal of removed materials to appropriate Landfill and/or recycling facilities, except where specified otherwise, and in accordance with authority having jurisdiction.
 - .1 Where possible, all existing recyclable materials, gravel, asphalt products, etc. to be transported to an appropriate recycling facility.
 - .2 Provide location of local facility receiving removed recyclable materials to Owner and Consultant.
- .7 Dispose of debris on a continuous basis. Do not stockpile debris in a manner which would overload structure, or impede access around site.

3.4 SEQUENCE OF OPERATION

- .1 Removal:
 - .1 Remove items as indicated in technical sections, including roofing ballast or gravel, metal roofing flashings, roofing membrane and flashings, roofing insulation, and or vapour retarder.
 - .1 Do not disturb items designated to remain in place.
 - .2 Restrict roofing demolition work to sections in limited size that will be restored and made watertight by end of working day.
 - .3 Use extreme caution when performing demolition work around skylights, sloped glazing, and other force and vibration sensitive roof projections.
- .2 Removal From Site:
 - .1 Interim removal of stockpiled material may be required, if it is deemed to interfere with operations of Owner.
 - .2 Do not overload existing roof structures.

- .3 Salvage:
 - .1 Carefully dismantle items containing materials for salvage and stockpile salvaged materials at locations acceptable to Owner and Consultant.
- .4 Disposal of Material:
 - .1 Dispose of materials not designated for salvage or reuse on site to be hauled to an authorized disposal site and or recycling facilities.
- .5 Backfill:
 - .1 Backfill in areas as indicated.

3.5 ABANDONED AND UNUSED ITEMS

- .1 Items of unused and/or abandoned rooftop equipment, units, service lines, cabling, and any related supports which are not operational or in use are to be removed and disposed of.
- .2 Existing services for abandoned equipment to be dismantled to below roof deck, and closed off in accordance with local bylaws and Code requirements. Confirm all electrical lockout procedures with Owner's representative.
- .3 Existing roof deck openings to be closed using following guidelines:
 - .1 Openings up to 152mm (6") in diameter or 152x152mm (6"x6"):
 - .1 Metal Decking: Install 610x610mm (24"x24") galvanized steel plate, min. 18ga. secured with 4 screws per side to existing decking.
 - .2 Openings greater than 152mm (6") in diameter or 152x152mm (6"x6"):
 - .1 Wood Planking: Replace with SPF #1 grade boards to match existing thickness. All replacement decking shall have 3 points of bearing. Provide new framing to match original as required.
 - .2 Plywood Decking: Replace with No.1 construction grade plywood sheathing, Good One Side (G1S), to match existing thickness. All replacement decking shall have 3 points of bearing and installed in logical rectangular shapes. New plywood decking to be supported by at least half thickness of roof joist, turss, or rafter underneath. Provide galv. H-clips to existing decking on unsupported sides.
 - .3 Steel Decking: Obtain ruling from Engineer whether decking is to be replaced or suitably overlaid with identical decking. Secure all decking with TEK screws at each lower flute bearing point structure; welding is not permitted.
 - .4 Concrete Deck: Refer to detail drawing.
 - .3 Openings greater than 915x915mm (3'x3'):
 - .1 Consult Structural Engineer for deck review and design of new framing, decking, securement, and any other required support.

3.6 DECK REPAIRS

- .1 Wood Decking: Areas of deteriorated wood planking or plywood decking to be cut out and replaced with new to match existing.

- .2 Metal Decking: Areas of corroded steel decking not requiring replacement to be cleaned using a wire brush to completely remove all evidence of corrosion. Remove all dust and coat with zinc rich epoxy primer to completely cover all areas where corrosion was evident.
- .3 Concrete Decking: Areas of concrete decking with pitted or deteriorated surfaces to be cleaned sufficiently to receive repair material. Repairs to be completed with quick set masonry repair grout trowelled to a smooth even finish, flush with surrounding areas.

3.7 RESTORATION

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

3.8 CLEANUP

- .1 Upon completion of work, remove debris, trim surfaces and leave work site clean.
- .2 Use only cleaning solutions and procedures which are not harmful to health, are not injurious to plants, and do not endanger wildlife, adjacent water courses or ground water.

END OF SECTION - 02 22 50

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PART 1 - GENERAL

1.1 RELATED SECTIONS

- .1 Section 01 10 00 – Scope of Work
- .2 Section 01 56 00 – Temporary Barriers and Enclosures
- .3 Section 02 22 50 – Selective Demolition and Removal
- .4 Section 07 52 10 – SBS Modified Bitumen Membrane Roofing
- .5 Section 07 62 00 – Sheet Metal Flashing and Trim

1.2 REFERENCES

- .1 Latest edition of all listed references to apply:
 - .1 American Lumber Standards Committee (ALSC): Softwood Lumber Standards.
 - .2 American Plywood Association (APA) Product Guide: Grades and Specifications.
 - .3 American Wood Preservers Assoc. (AWPA): Timber Products Pressure Treatment.
 - .4 Canadian Standards Association (CAN/CSA):
 - .1 CAN/CSA B111: Wire Nails, Spikes and Staples.
 - .2 CAN/CSA-G164M: Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .3 CAN/CSA O121M: Douglas Fir Plywood.
 - .4 CAN/CSA-O141-91: Softwood Lumber.
 - .5 CAN/CSA O151M: Canadian Softwood Plywood.
 - .6 CAN/CSA-O325.0: Construction Sheathing.
 - .5 National Forest Products Association (NFPA): Grading Rules.
 - .6 National Lumber Grades Authority (NLGA): Stnd. Grading Rules, Canadian Lumber.

1.3 QUALITY ASSURANCE

- .1 Lumber identification to be by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.
- .2 Plywood identification to be by grade mark in accordance with applicable CSA standards.
- .3 Plywood, OSB and wood based composite panel construction sheathing identification to be by grademark in accordance with applicable CSA standards.
- .4 At all times during Work, Contractor will have on site a qualified project supervisor. It will be Supervisor's responsibility to ensure that Work is carried out in an efficient manner, according to Plans and Specifications.
- .5 Provide shop drawings for Consultants review, of new wall modification including louvre extension and new window units.
- .6 Mock up of exposed Carpentry will be made available for review of Owner and Consultant at wall modifications. This may be submitted by partial constructed components.

1.4 DELIVERY, STORAGE, AND HANDLING

- .1 Protect lumber and other products from dampness both during and after delivery at site.
- .2 Pile lumber in stacks in such manner as to provide air circulation around surfaces of each piece.
- .3 Stack plywood and other board products so as to prevent warping.
- .4 Locate stacks on well drained areas, supported at least 152mm (6") above grade and cover with well ventilated sheds having firmly constructed over hanging roof with sufficient end wall to protect lumber from driving rain.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Set aside damaged wood and dimensional lumber off-cuts for acceptable alternative uses (e.g. bracing, blocking, cripples, bridging, finger-joining, or ties). Store this separated reusable wood waste convenient to cutting station and area of work.
- .2 Separate and recycle waste materials in accordance with applicable local, provincial and national regulations. Include for tipping fees associated with landfills and recycling depots
- .3 Unused preservatives and fire retardant materials are to be diverted from landfill through disposal at a special wastes depot.
- .4 Do not burn scrap at project site.
- .5 Fold up metal banding, flatten, and place in designated area for recycling.

PART 2 - PRODUCTS

2.1 LUMBER MATERIALS

- .1 Materials to be best merchantable lumber, straight and sized and shaped to correct dimensions from nominal sizes noted on drawings. Lumber to be selected from well seasoned stock, free from loose resinous knots, shakes, waxed edges, splits, dry rot or other defects which would impair strength or durability.
- .2 Lumber in accordance with following standards:
 - .1 CAN/CSA-O141.
 - .2 NLGA Standard Grading Rules for Canadian Lumber.
- .3 Unless specified otherwise all framing members to be No.1/No.2 SPF.
- .4 All materials directly exposed to exterior to be pressure treated unless noted otherwise on drawings or elsewhere in specification.
- .5 Furring, blocking, nailing strips, grounds, rough bucks, cants, curbs, fascia backing and sleepers to be pressure treated where exposed to exterior elements.
- .6 Moisture Content:
 - .1 At time of delivery and maintained at site.
 - .2 Boards and lumber 51mm (2") and less in thickness: 19% or less.
 - .3 Lumber over 51mm (2") thick: 25% or less.
- .7 Preservative Treatment:

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

2.2 PANEL MATERIALS

- .1 Douglas fir plywood (DFP): to CSA O121, standard construction, Good one side (G1S) when in contact with roofing membrane.
- .2 Canadian softwood plywood (CSP): to CSA O151, standard construction, Good one side (G1S) when in contact with roofing membrane.
- .3 Plywood, OSB and wood based composite panels: to CAN/CSA-O323.

2.3 ACCESSORIES

- .1 Bent metal plate: 18ga or 22ga, galvanized metal sheet, formed as required or as indicated on drawings to provide support for wood blocking or roof assembly components.
- .2 Anchorage to hollow masonry and gypsum walls: Galvanized toggle bolts.
- .3 Anchorage to solid masonry or concrete: Expansion shields and lag bolts:
 - .1 Rawl mushroom head lead anchors, min 6mm (0.25") diameter for sheathing,
 - .2 Hilti Kwik-Bolts for structural members.
- .4 Anchorage of wood members to sheet steel studs: Corrosion coated screws, min #14 thread, of length to penetrate minimum 19mm (0.75") through material into base.
- .5 Nails: Minimum 6d, hot dip galvanized spiral or ring shank nails, length to penetrate through material 38mm (1.5") into base.
- .6 Anchorage of wood blocking to masonry: Masonry screws, Tapcon anchors of sufficient length to penetrate 32mm (1.25") into masonry surfaces.
- .7 Batt Insulation: Stone wool mineral fiber batt insulation by Roxul Inc.
- .8 Explosive actuated fastening devices are prohibited for use on this project.

2.4 ACCESSORY FINISHES

- .1 Galvanizing: to CAN/CSA-G164:
 - .1 galvanized fasteners for all exterior work unless otherwise specified
 - .2 galvanized fasteners for all high interior humid areas unless otherwise specified
- .2 Use stainless steel type 304 where noted on drawings

PART 3 - EXECUTION

3.1 PREPARATION

- .1 Comply with safety regulations and applicable bylaws governing work included in this section. Provide and maintain necessary barriers, guards and rails.
- .2 Scope of work includes parapet wall, roof joint, and wall modifications as indicated on drawings or as required to provide a secure, smooth surface to receive the new roof and flashing assembly:
 - .1 Install wood blocking secured into existing surfaces adequately to resist movement and wind uplift forces as per FMG 1-49, minimum 200 pounds/foot.
 - .2 Install mineral fiber insulation at all voids and as indicated on drawings.
 - .3 Install plywood sheathing to drawings.
- .3 Complete wood blocking and sheathing to walls, curbs and drains as indicated on drawings.

3.2 SITE APPLIED WOOD TREATMENTS

- .1 Treat only wood blocking which will remain exposed to the elements.
- .2 Treat ends of site cut surfaces of materials delivered to site with wood preservative.
- .3 Re-treat surfaces exposed by cutting, trimming or boring with liberal brush application of preservative before installation.

3.3 INSTALLATION

- .1 Comply with requirements of Provincial Building Code at Place of Work, supplemented by following paragraphs:
 - .1 Ensure continuity and completeness of vapour retarder membrane as coinciding with new wood blocking installation.
 - .2 Provide mineral wool insulation to fill voids at roof deck level or as otherwise required or indicated on detail drawings.
 - .3 Install furring and blocking as required to space-out and support new walls, window projections and louver extensions, fascia, soffit, siding and other work as required.
 - .4 Align and plumb faces of furring and blocking to tolerance of 1:600.
 - .5 Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other work.
 - .6 Install wood cants, fascia backing, nailers, curbs and other wood supports as required and secure with adequate fasteners.
 - .7 Install sleepers as indicated.

3.4 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.

END OF SECTION - 06 10 00

PART 1 - GENERAL

1.1 SECTION INCLUDES

- .1 Installation of a new roof system over prepared substrate.
- .2 Existing roofing components and related appurtenances to be removed as specified in preparation for installation of a new low slope, conventional roofing system, including but not limited to:
 - .1 On Roof Areas 1.1 and 2.1:
 - .1 Existing wood roof deck,
 - .2 Existing membrane,
 - .3 1 layer 0.5" (13mm) membrane laminated mineral fiberboard overlay board, mechanically attached,
 - .4 1 ply modified bitumen base sheet flashings, self adhered,
 - .5 1 ply granular modified bitumen cap sheet membrane, torch applied,
 - .6 1 ply granular modified bitumen cap sheet flashings, torch applied,
 - .7 Prefinished metal flashings and trim.

1.2 RELATED SECTIONS

- .1 Section 01 11 00 – Summary of Work
- .2 Section 02 22 50 – Selective Demolition and Removal
- .3 Section 07 62 00 – Sheet Metal Flashing & Trim
- .4 Section 07 92 00 – Joint Sealants

1.3 REFERENCES

- .1 Latest edition of all listed references; most stringent requirements to govern in conflicts:
 - .1 American Society for Testing and Materials (ASTM) International:
 - .1 C578: Rigid, Cellular Polystyrene Thermal Insulation.
 - .2 C726: Mineral Fibre Roof Insulation Board.
 - .3 C1177(M): Standard Specification for Glass Mat Gypsum Substrate.
 - .4 C1289: Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
 - .5 C1396(M): Standard Specification for Gypsum Board.
 - .6 D41: Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
 - .7 D312: Asphalt Used in Roofing.
 - .8 D2822: Asphalt Roof Cement.
 - .9 D4601: Standard for Asphalt Coated Glass Fibre Base Sheet Used in Roofing.
 - .10 D6162: SBS Mod. Bit. Sheets Using Polyester & Glass Fiber Reinforcements.
 - .11 D6163: SBS Mod. Bit. Sheets Using Glass Fiber Reinforcements.
 - .12 D6164: SBS Mod. Bit. Sheets Using Polyester Reinforcements.
 - .2 Canadian Standards Association (CAN/CSA):
 - .1 A123.21: Wind Uplift.
 - .2 A123.2: Asphalt Coated Roofing Sheets.
 - .3 A123.16: Asphalt Coated Glass Base Sheets.
 - .4 A231.1: Precast Concrete Paving Slabs.

- .5 0121M: Douglas Fir Plywood.
- .6 0151M: Canadian Softwood Plywood.
- .3 Canadian General Standards Board (CAN/CGSB):
 - .1 37.29M: Rubber-Asphalt Sealing Compound
 - .2 37-GP-9M: Primer, Asphalt, unfilled, for Asphalt Roofing and Waterproofing.
 - .3 37-GP-15M: Application of Asphalt Primer for Asphalt Roofing & Waterproofing.
 - .4 37-GP-56M: Membrane, Bituminous, Prefabricated and Reinforced for Roofing.
 - .5 51.26M: Thermal Insulation, Urethane and Isocyanurate, Boards, Faced.
 - .6 51.33M: Vapour Barrier Sheet, Excluding Polyethylene, for use in Construction.
 - .7 51.34M: Vapour Barrier Sheet, Polyethylene Sheet for use in Construction.
- .4 Underwriters Laboratories of Canada (CAN/ULC):
 - .1 S701: Thermal Insulation, Polystyrene, Boards and Pipe Covering.
 - .2 S702: Thermal Insulation, Mineral Fibre, for Buildings.
 - .3 S704: Thermal Insulation, Polyurethane and Polyisocyanurate, Boards, Fixed.
- .5 Roofing Contractors Association of BC (RCABC): Roofing Manual.
- .6 Canadian Roofing Contractors Association (CRCA): Roofing and Waterproofing Manual.

1.4 CONTRACTOR QUALIFICATION

- .1 Roofing Contractor to perform specified Work must:
 - .1 have a minimum ten (10) years work experience with materials specified or similar comparable products,
 - .2 be a member in good standing with Roofing Contractors Association of BC (RCABC),
 - .3 and be licensed and insured for Place of Work.
- .2 Roofing Contractor must be pre-approved and certified by Membrane Manufacturer for specified materials, installation type, and warranty requirements.
 - .1 Contractor's installers must be certified and carded for installation of specified materials.
 - .2 Contractor's employees and Subcontractors must be WHMIS certified.
 - .3 Owner reserves right to reject any proposed Subcontractor for reasonable cause.

1.5 QUALITY ASSURANCE

- .1 Compatibility between components of roofing system and wall system is essential. Provide written declaration to Consultant stating that materials and components, as assembled in new system will meet this requirement.
- .2 Perform Work in accordance with Contracts Documents and Manufacturer's written instructions.
- .3 Make no deviation from Project Specifications or approved shop drawings without prior written approval by Consultant and, if applicable, Manufacturer.
- .4 Contractor to arrange for a Technical Representative of Manufacturer to review installed roof system wherever a Standard or System Warranty requirement has been specified.
- .5 Upon completion of new installation, provide certification that all work has been done in strict accordance with Contract Documents and to Manufacturer's requirements.

1.6 QUALITY ASSURANCE OBSERVATION

- .1 IRC Building Sciences Group, hereafter known as “Observer”, is an independent Quality Assurance Observation Agency appointed by Owner to observe performance of roof Work:
 - .1 Roofing Contractor to arrange Prestart site meeting with Observer no more than three (3) weeks prior to commencement of Work on site. Obtain Observer's instructions and reference procedures to be followed on project.
 - .2 Provide to Observer date when each phase of work will begin, at least forty-eight (48) hours prior to commencement of Work for phase.
 - .3 Arrange Final Observation and examination of installed roof with both Observer and Manufacturer's Technical Representative.
- .2 Cooperate with Observer and afford all facilities necessary to permit full Quality Assurance Observations during performance of Work. Act immediately on instructions given by Observer.
- .3 When required, provide roof cut-outs and samples in field where directed by Observer and make good without additional cost to Owner.
- .4 When initial tests and observations reveal work failing to meet contract requirements, pay for any additional testing and observations required by Observer or third party testing agency for correction of Work, without additional cost to Owner.
- .5 Copies of Q.A. Observation Reports to be issued by Observer to Owner and Prime Contractor.

1.7 DELIVERY, STORAGE, AND HANDLING

- .1 Site storage is limited. Where applicable, location of storage and related facilities to be coordinated with Prime/General Contractor.
- .2 All materials to be delivered and stored in their original packaging bearing manufacturers label, grade and product weight, including all other related standards, specifications, and like.
- .3 All materials to be adequately protected from inclement weather conditions and stored in a dry, well ventilated and weather protected location. Use only dry materials and apply only during weather that will not introduce moisture into roofing system.
- .4 Only materials to be installed on same day to be removed from protected location to work site.
- .5 During extreme temperature, materials to be stored in a heated location with a 4.4°C (40°F) minimum temperature and removed only as needed.
- .6 Modified bitumen rolls to be kept clear of all flames and sparks when not being applied to roof.
- .7 All materials in a rolled configuration to be stored on end, elevated off ground, and on a pallet or skid to protect bottom surface from foreign debris and moisture.
- .8 Restrict stockpiling of material in one location on roof to prevent exceeding specified deck live load capacity. Avoid point loading that may compromise structural integrity of roof.
- .9 Handle and store products in a manner to prevent damage and deterioration.
- .10 Remove and replace damaged products at own expense and to satisfaction of Consultant.

1.8 ENVIRONMENTAL REQUIREMENTS

- .1 Do not apply roofing materials to damp, wet, or frozen deck or substrates.

- .2 Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed during same day.
- .3 Only install as much new roofing as can be made weather-tight each day, including all flashing and detail work. All seams to be sealed or heat welded before leaving job site that work day.
- .4 All work to be scheduled and executed without exposing interior building areas to effects of inclement weather. Existing building and its contents to be protected against all risks.
- .5 All new and temporary construction, including equipment and accessories, to be secured in such a manner as to preclude wind blow-off and subsequent roof or equipment damage.
- .6 Uninterrupted water-stops to be installed at end of each day's work and to be completely removed before proceeding with next day's work. Water-stops to not emit dangerous or unsafe fumes and to not remain in contact with finished roof as installation progresses. Contaminated membrane to be replaced at no cost to Owner.
- .7 Arrange work sequence to avoid use of newly constructed roofing as a walking surface or for equipment movement and storage. Where such access is absolutely required, provide all necessary protection and barriers to segregate work area and to prevent damage to adjacent areas. A substantial protection layer consisting of plywood over felt or plywood over insulation board to be provided for all new and existing roof areas that receive rooftop traffic during construction.
- .8 Prior to and during application, all dirt, debris and dust to be removed from surfaces by vacuuming, sweeping, blowing with compressed air, and/or similar methods.
- .9 Follow all safety regulations as required by OHS (Occupational Health and Safety) and any other applicable authority having jurisdiction.
- .10 All roofing, insulation, flashings and metal work removed during construction to be immediately taken off site to a legal dumping area authorized to receive such materials. Hazardous materials, such as materials containing asbestos, are to be removed and disposed of in strict accordance with applicable Local, Provincial, and National requirements.
- .11 All new roofing waste material (i.e., scrap roof membrane, empty cans of adhesive) to be immediately removed from site by Contractor and properly transported to a legal dumping area authorized to receive such material.
- .12 Take precautions that storage and/or application of materials and/or equipment does not overload roof deck or building structure.
- .13 Flammable adhesives and deck primers to not be stored and not be used in vicinity of open flames, sparks and excessive heat.
- .14 All rooftop contamination that is anticipated or that is occurring to be reported to manufacturer to determine corrective steps to be taken.
- .15 Verify that all roof drain lines are functioning correctly (not clogged or blocked) before starting work. Contractor to report any such blockages in writing to Consultant for corrective action prior to installation of roof system.
- .16 Immediately stop work if any unusual or concealed condition is discovered and immediately notify Consultant of such condition in writing in order to obtain additional instruction.
- .17 Site cleanup, including both interior and exterior building areas that have been affected by construction, to be completed to satisfaction of Consultant.

- .18 All landscaped areas damaged by construction activities to be repaired at no cost to Owner.
- .19 Do not install membrane under following conditions without consulting Manufacturer's Technical Department for precautionary steps:
 - .1 Roof assembly permits interior air to pressurize membrane underside.
 - .2 Any exterior wall has 10% or more of surface area comprised of opening doors or windows.
 - .3 Wall to deck intersection permits air entry into wall flashing area.
- .20 Take precautions when using adhesives at or near rooftop vents or air intakes. Avoid adhesive odours from entering building. Coordinate operation of vents and air intakes in such a manner as to avoid intake of adhesive odour while ventilating building. Keep lids on unused cans at all times.
- .21 Protective wear to be worn when using solvents or adhesives or as required by job conditions.

1.9 PREPARATORY WORK

- .1 Review roof levels and advise Consultant of any deviation from specified tolerances.
- .2 Review roof drain locations and number. Advise Consultant of any deviation or alteration from specifications.
- .3 Sweep roof deck free of dust or dirt and remove all debris prior to any installation work.

1.10 SAFETY AND PROTECTION

- .1 Latest edition of all listed references to apply:
 - .1 CAN/CSA S269.2M: Access Scaffolding for Construction Purposes.
 - .2 Fire Commissioner of Canada: FC 301 - Standard for Construction Operations.
- .2 Solvents, Adhesives and Membranes:
 - .1 Store only enough solvents and adhesives on roof for same day's use. Do not leave adhesives on roof over night. Manufacturer supplied adhesives should be stored in their over night containers. Minimum temperature for solvent based adhesives and primers is -5°C (23°F).
 - .2 Do not install roof membrane when temperature remains below 5°C (41°F) for self adhered installations. Apply materials in accordance with manufacturer's recommendations and in accordance with Canadian Modified Bitumen Manufacturer's Association.
 - .3 Refer to Manufacturer's literature for additional guidelines.
 - .4 Protect walls where hoisting is required.
 - .5 Protect roofs from damage due to traffic and materials handling until completion.
 - .6 Keep a fire extinguisher at access to building interior wherever solvent based products are stored or used.
- .3 Fire Safety:

- .1 Contractor must keep charged and ready fire extinguishers on site at all times, including on roof and at access points to building interior.
- .2 Contractor responsible to provide a two (2) hour fire watch at completion of each day's activities on all projects implementing use of propane torches and/or burners.
 - .1 A handheld, infrared thermal scanner suitable for roofing applications and fire alert must be kept on site at all times during torching procedures. Fire scanner by Raytek or approved IRC Group equal. Check seams and flashings at hourly intervals for flare ups.
- .4 Health and Safety:
 - .1 Contractor to comply with all safety requirements as per current printed edition of Provincial Occupational Health and Safety Act and with Roofing Contractors Association of BC (RCABC) standards.
- .5 The Roof Contractor shall be designated as "Prime Contractor" and will be responsible to ensure that section 118 of the WSBC Act and regulation 20.3 are complied with.
 - .1 The Roofing Contractor / "Prime Contractor" is responsible, among other things, for:
 - .1 Establishing a system of roof orientations; and
 - .2 Establishing a system of supervision for all workers on the roof; and
 - .3 Ensuring all employers' workers who access the roof comply with regulations, and the act including insuring documented fall protection planning, access/egress, first aid & emergency procedure issues are addressed.
 - .2 The Prime Contractor is responsible for ensuring that every employee and worker who access the roof area for which he / she is primarily responsible, complies with all WSBC regulations.
 - .3 Workers at the roofing construction site include: delivery personnel, visitors, consultants, inspectors & owner's agents and employees.

1.11 WARRANTY

- .1 Contractor's Workmanship Warranty:
 - .1 Provide Owner with Contractor's two (2) year Warranty for Workmanship and Materials on Contractor's letterhead. Warranty period to commence on date of Approved Final Inspection. The Warranty is intended to provide coverage in the event the Manufacturer's labour and material warranty or the RGC Roofstar Guarantee is deleted or to cover items not included in the Manufacturer's labour and material warranty or the RGC Roofstar Guarantee. Cost of Contractor's Workmanship Warranty to be included in the contract price.
- .2 Manufacturer's System Warranty:
 - .1 Provide a written Ten (10) Year Membrane Manufacturer's No Dollar Limit System (Platinum Privilege) Warranty from the date of Approved Final Inspection. Cost of Manufacturer's Warranty to be included in the contract price.
- .3 RCABC RGC RoofStar Guarantee:

- .1 Provide to the Owner, the RGC RoofStar Ten (10) Year Guarantee. The cost of the RCABC Guarantee administration fee only to be shown as a separate cost item on the RFQ documents.
- .4 Cost of all Field Reviews to be included in Contract Price.
- .5 Costs of Post Final Field Review(s) or extra field reviews due to Contractor not completing the work by the contractual Completion Date, if required, shall be charged back to the Contractor at a rate of \$750.00 per inspection.

PART 2 - PRODUCTS

2.1 GENERAL

- .1 All membrane materials are to be supplied by Soprema, meeting manufacturer's material compatibility requirements to achieve required System Warranty. Other Manufacturers of equivalent products and systems are invited to submit proposals through the Roofing Contractor at the time of RFQ. Consideration may be given to alternative 2 ply SBS modified bitumen systems only, which do not require the use of hot asphalt and shall employ proprietary adhesive attachment as the system securement. All accessory materials must be supplied and / or approved in writing by the primary Membrane Manufacturer. Proposals must include product technical data sheets, or site-specific descriptions and printed manufacturers installation instructions and must comply fully with the experience and job reference requirements of Section 1.6 Quality Assurance of these specifications.
- .2 Components to be used that are other than those supplied or manufactured by membrane manufacturer may be submitted for review and acceptance by membrane manufacturer.
- .3 Membrane Manufacturer's acceptance of any other product is only for a determination of compatibility with products and not for inclusion in manufacturer's warranty.
- .4 Specifications, installation instructions, limitations, and/or restrictions of respective manufacturers must be reviewed by Consultant for acceptability for intended use with membrane manufacturer's products.

2.2 MECHANICAL FASTENERS

- .1 Fasteners for Insulation Boards:
 - .1 Self tapping, epoxy coated carbon steel or solid stainless steel deck screws approved by membrane Manufacturer to meet warranty requirements, complete with securement plates in a fastening pattern meeting CSA 123.21 requirements:
 - .2 Acceptable Product:
 - .1 #14 Soprafix fasteners by Soprema,

2.3 MEMBRANE PRIMER

- .1 General Purpose:
 - .1 Solvent Based Primer: Composed of volatile solvents, synthetic polymers, and/or adhesive enhancing resins to prepare surfaces for membrane application:
 - .1 Elastocol 500 by Soprema,
- .2 High-tack for Self Adhered Membranes:

- .1 Solvent Based Primer: Composed of volatile solvents, synthetic polymers, and/or adhesive enhancing resins to prepare surfaces for self adhered membranes:

- .1 Elastocol Stick by Soprema,

2.4 OVERLAY BOARD

- .1 Non-combustible, rigid mineral wool board insulation with factory laminated reinforced SBS modified bitumen base sheet membrane on top side, and with minimum compressive strength of 96.5 kPa at 25mm of thickness (14 psi at 1"). Panel boards to have a membrane selvage edge width of 86mm (3.375") for overlapping onto next board. Acceptable Products:

- .1 Xpress Board HD by Soprema,

- .2 Laminated Mineral Fibre Board Size: Flat 0.914m x 4.88m (3' x 16') panels.

- .3 Laminated Mineral Fibre Thickness: Unless otherwise indicated on roof plan:

- .1 Continuous layer of insulation 13mm (0.5") in thickness.

- .4 Laminated Mineral Fibre Board Top Surface: Top surface to have thermofusible polyolefin film.

- .5 Laminated Mineral Fibre Board Bottom Surface: Bottom surface to be factory coated with a layer of compatible bitumen for improved adhesion to DuoTack adhesive.

- .6 Laminated Mineral Fibre Board Cover Strips: At insulation panel end joints, 330mm (13") wide strips of 2.5mm (1/8") thick SBS modified bitumen base sheet membrane with composite reinforcement, conforming to CGSB 37-GP-56M.

- .1 Torch Application: Top and bottom surface covered with thermofusible polyolefin film.

- .1 Acceptable Product: SopraLap by Soprema.

- .7 All tapered insulation to be factory cut and mitred, and supplied by Accu-plane Enterprises Inc., Beacon Roofing Supply, Everest Supply Inc., Posi-slope Enterprises Inc., or ModulR TS Inc.

- .1 Submit all shop drawings to Consultant for review prior to prefabrication.

2.5 MODIFIED BITUMEN MEMBRANE – TORCH & TORCH APPLIED

- .1 Base Sheet Field Membrane:

- .1 Factory Laminated to mineral fibre insulation board.

- .2 Base Sheet Flashing: Install S. A. flashings before field membrane at perimeters and curbs:

- .1 Self Adhered grade modified bitumen: minimum 2.6mm with minimum 180g/m² non-woven polyester scrim, random glass fibre mat, or composite reinforcement, impregnated and coated with SBS modified bitumen, and conforming to CGSB 37-GP-56M. Top surface to be sanded or have thermofusible polyolefin film with self adhesive bitumen bottom surface covered with polyolefin or silicone release film.

- .1 Sopralene Flam Stick by Soprema.

- .2 Torch grade modified bitumen: minimum 2.6mm with minimum 180g/m² non-woven polyester scrim, random glass fibre mat, or composite reinforcement, impregnated and coated with SBS modified bitumen, and conforming to CGSB 37-GP-56M. Top surface to be sanded or have thermofusible polyolefin film with bottom surface covered with sand or thermofusible polyolefin film.

- .1 Sopralene Flam 180 by Soprema,
- .3 Cap Sheet Field Membrane:
 - .1 Torch grade modified bitumen, minimum thickness 4mm, with composite reinforcement, impregnated and coated with SBS modified bitumen, and conforming to CGSB 37-GP-56M. Top surface to have No. 11 ceramic granules and torch grade bitumen bottom surface covered with sand or thermofusible polyolefin film. Colour to be Light Grey.
 - .1 Sopraply Traffic Cap by Soprema,
- .4 Cap Sheet Flashing:
 - .1 Torch grade modified bitumen, minimum thickness 4mm, with composite reinforcement, impregnated and coated with SBS modified bitumen, and conforming to CGSB 37-GP-56M. Top surface to have No. 11 ceramic granules and torch grade bitumen bottom surface covered with sand or thermofusible polyolefin film. Colour to be Light Grey.
 - .1 Sopraply Traffic Cap by Soprema,

2.6 LIQUID APPLIED PMMA RESIN FLASHINGS

- .1 Catalyzed Acrylic Resin Flashing System: Alsan RS Flashing System by Soprema consisting of a liquid-applied, fully reinforced, multi-component acrylic membrane installed over a prepared or primed substrate. The flashing system consists of a catalyzed acrylic resin primer, basecoat and topcoat, combined with a non-woven polyester fleece. The resin and catalyst are mixed immediately prior to installation. The use of the specialty flashing system shall be specifically approved in advance by the Membrane Manufacturer for each application.

2.7 FASTENERS, PLATES & FASTENING BARS

- .1 All fasteners and plates to meet requirements of Factory Mutual Global 4470 Standard for wind uplift and corrosion resistance in roofing.
- .2 Wood to steel, wood to wood or steel to steel:
 - .1 Tru-Fast Ultra Solid Stainless Steel fastener or equal approved by membrane Manufacturer, to penetrate substrate by minimum 19mm (3/4").
- .3 Wood/steel to concrete or concrete block:
 - .1 Perma-Grip Tap Grip H.D. Truss Head fastener with Perma-Coat Z3 corrosion protection or equal approved by membrane Manufacturer, to penetrate substrate by 32mm (1 1/4").
 - .2 Tru-Fast Tap Grip H.D. Truss Head fastener with Perma-Coat Z3 corrosion protection to penetrate substrate by 32mm (1 1/4").
- .4 Steel/aluminum to aluminum:
 - .1 Tru-Fast DP with Trucote PC-3 corrosion protection fastener c/w EPDM galvanized steel sealing washers or equal approved by membrane Manufacturer, to penetrate substrate by 19mm (3/4").
- .5 Termination bar for membrane:
 - .1 Extruded aluminum, 1.5mm (0.060") thick x 25mm (1") wide x 3.05m (10') long with 6mm x 9.5mm (1/4" x 3/8") slotted holes on 203mm (8") o/c. Acceptable material: TB-120 aluminum termination bar by Tru-Fast or equal approved by membrane Manufacturer.

- .6 Termination bar fastener for wood, steel or aluminum:
 - .1 Tru-Fast Ultra Solid Stainless Steel fastener to penetrate substrate by 19mm (3/4") c/w EPDM galvanized steel sealing washers or Construction Fasteners Inc. Woodgrip #14 screw complete with Senti coating on threads, Chromagard colour match head and EPDM washer, or equal approved by membrane Manufacturer,
- .7 Termination bar fastener for concrete or masonry:
 - .1 Tru-Fast Tap Grip Truss Head fastener with Perma-Coat Z3 corrosion protection or equal approved by membrane Manufacturer, to penetrate substrate by 32mm (1 1/4") c/w EPDM galvanized steel sealing washers.
- .8 Pre-painted metal flashing to steel or wood:
 - .1 #14 Colormate fasteners by Leland Industries, Construction Fasteners Inc. Woodgrip #14 screw complete with Senti coating on threads and Chromagard colour match heads with EPDM washer, or equal approved by membrane Manufacturer, to penetrate substrate by minimum 19mm (3/4").
- .9 Membrane to wood:
 - .1 Galvanized round top roofing nails with minimum 25mm (1") diameter heads or plate and head combination, to penetrate substrate a minimum 32mm (1 1/4").

2.8 ROOFING ACCESSORIES

- .1 Roofing accessories to be manufactured from spun aluminum or copper as required, and complete with removable caps where applicable. Unless otherwise designated by Consultant, pitch pockets are strictly prohibited. All units are to have foamed in place closed cell urethane foam insulation sprayed into unit at plant under controlled conditions. Flanges to be primed with rubberized asphalt compatible primer.
 - .1 Roof Drain: Clamp-Tite by Menzies Metal Products,
 - .2 Overflow Drains: Clamp-Tite Overflow Scupper Drain by Menzies Metal Products,
 - .3 Plumbing Stack Flashing: Welded Aluminum by Menzies Metal Products,
 - .4 Split Flashing: SPJ-1 Round Split Flashing by Thaler Metal Products,
- .2 Roof Walkway Pads: Soprawalk as manufactured by Soprema.
 - .1 Walkway Pad Attachment: As recommended by manufacturer.
- .3 Conduit & gas piping supports: fabricated from UV resistant re-cycled rubber complete with 14ga galvanized channel:
 - .1 C-Port C-Series Roof Blocks as manufactured by Clearline Technologies Inc.
- .4 Membrane Tools: Use tools, hand rollers, weighted rollers, squeegees, etc. as recommended by membrane Manufacturer for installation of their product to ensure compatibility and avoid damaging of pressure sensitive membranes.
- .5 Pourable Sealer: Elastomeric pourable sealer as approved and/or supplied by Soprema.
- .6 Sealing Compound: Rubberized Sealing Compound to CAN/CGSB-37.29, rubber asphalt type as approved and/or supplied by Soprema.
- .7 Spray Urethane foam: One or two component polyurethane spray foam insulation. Use low pressure spray foam insulation at force sensitive areas.

- .8 Fire Protection in flame sensitive locations, as determined by the Contractor: 165mm wide tape consisting of a glass fleece reinforcement and SBS modified bitumen: Approved product by Soprema.
- .1 Firestop Sealant: One component, neutral cure silicone sealant meeting ASTM E84 and CAN4-S115M, designed for firestop applications at joints and through-wall penetrations; TREMstop Fyre-Sil silicone sealant (red) by Tremco or IRC Group approved equal.
- .9 Sheet Metal Flashings and Trim: As per Section 07 62 00 and fabricated from 24 gauge prepainted steel. Hook strips to be 2 gauges heavier than flashings. Colour to match existing.
- .10 Sealants: As per Section 07 92 00. Colour of sealants to match component applied against.

PART 3 - EXECUTION

3.1 WORKMANSHIP

- .1 Perform roofing work which is not specifically covered by these Specifications in accordance with applicable industry standards and good roofing practices of:
 - .1 Canadian Roofing Contractors Association (CRCA),
 - .2 Canadian Modified Bitumen Manufacturer's Association's recommendations,
 - .3 Manufacturer's preprinted and published technical specifications,
 - .4 ULC Design No. S-107 criteria,
 - .5 Factory Mutual Global design criteria FM 1-28 and 1.49,
 - .6 Compliance with local fire insurance requirements,
 - .7 Compliance with local building codes.
- .2 Procedures for application of materials should be in accordance with Manufacturer's printed instructions and recommendations.
 - .1 Advise Consultant of adjustments to specified roofing procedures recommended by Manufacturer or due to site conditions.
 - .2 Written approval by Consultant is required to make any adjustments to specified procedures.
- .3 All work to be carried out in accordance with drawings, and specifications provided.
 - .1 All supplied drawings and details constitute acceptable installations. Any deviance from these details must first be approved by Consultant prior to installation.
- .4 While work is in progress, all steps must be taken to safeguard building from damage due to weather, fire, and structural overloading.
- .5 Examine underside of roof deck when installing mechanical fasteners, where possible, to avoid accidental damage to existing services.
- .6 Apply each part of roofing system when surfaces are free of moisture for successful application.
- .7 Do priming for asphalt roofing in accordance with CAN/CGSB 37-GP-15M and as recommended by membrane manufacturer.
 - .1 Adhesives or sealants and liquid primers will not be applied until surfaces are dry.

3.2 EXAMINATION OF SITE CONDITIONS

- .1 Examine existing site conditions and substrates upon which work of this section is dependent. Report to Consultant in writing any defects or discrepancies. Commencement of work implies acceptance of existing conditions and assumption of full responsibility for finished condition of work.
- .2 Defective work resulting from application to unsatisfactory conditions will be considered responsibility of those performing work of this section.

3.3 PROTECTION

- .1 Adjacent Buildings and Tenants:
 - .1 Take care to not damage any adjacent or closely located buildings and all related grounds in vicinity of Work during roofing operations.
 - .2 Protect against infiltration of dust, debris, and other such contaminants and occurrences.
 - .3 Locate garbage chutes to minimize exposure to adjacent building, its grounds, and its occupants.
 - .4 Protect walls by means of tarpaulins where garbage chutes and hoisting equipment are located and operated.
 - .5 Cover dumpsters and bins to prevent debris from blowing away.
 - .6 Do not use spray installation methods on days with significant wind.
 - .7 Damage to adjacent buildings, grounds, and vehicles to be rectified by Contractor at no additional cost.
- .2 Adjacent Roof Areas and Completed Work:
 - .1 Take care not to damage any previously performed work or existing roofs.
 - .2 If work area is accessed across existing roof areas, provide protection to existing roof system. Use continuous Protection Walkways consisting of 19mm (0.75") plywood sheathing over 25mm (1") extruded polystyrene insulation.
 - .3 Protect newly installed roof work from traffic and damage using Protection Walkways where warranted by traffic requirements.
 - .4 Comply with any precautions deemed necessary by Consultant.
- .3 Material Storage:
 - .1 Deliver all materials to site in undamaged condition with original manufacturer's label intact and clearly visible for easy verification of specified materials.
 - .2 Provide security fencing at all times for equipment and materials stored at ground level.
 - .3 Protect rolls from flattening by storing on ends on skids.
 - .4 Whenever possible, store roof materials off roof at designated, protected storage area.
- .4 Structural Integrity of Roof:
 - .1 Use only equipment that will not adversely affect, damage, or alter roof deck.

- .2 Do not create point loads that may adversely affect performance of existing deck when storing materials on roof.
- .5 Inclement Weather:
 - .1 Immediately halt work during inclement weather, including but not limited to rain fall, snow, drizzle, fog, and hail. Protect exposed building substrates, open building cavities, and moisture sensitive products.
 - .2 At end of each work day or when stoppage occurs due to inclement weather, provide suitable protection from elements for completed work and materials out of storage.
 - .3 Place in to heated storage any temperature sensitive materials such as membranes, adhesives, and sealants when temperature falls below 5 °C (40 °F).
 - .4 Protect all vents, stacks, drains and related deck openings from inclement weather and contamination from debris.
- .6 Roof Safety, Access, and Egress:
 - .1 Use warning signs and barriers. Maintain in good order until completion of work.
 - .2 Access to roof to remain unobstructed.
 - .3 Keep doorways and fire routes clean and clear of any obstacles.
 - .4 Protect and safeguard all man-size or larger openings in roof deck with warning flags and suitable temporary barriers or railings.
- .7 Damage and Defective Work:
 - .1 Avoid use on roof of any petroleum based and other chemical products that are corrosive and/or damaging to membrane. Provide protection to membrane from any accidental spills or drips. Any damage to roof system caused by non-compatible products to be cut out and replaced at no cost to Owner.
 - .2 Investigate and examine any damage caused by execution of Work for this contract, and repair or replace with new materials to match original finish. Restoration and repair work to be reviewed and approved by Consultant.
 - .3 Defective Work resulting from application of material on unsatisfactory surface or substrate to be rectified by Contractor at no additional cost.
 - .4 Defective Work resulting from improper installation of materials to be rectified by Contractor at no additional cost.

3.4 SURFACE PREPARATION

- .1 Preparation:
 - .1 Examine all roof decks and existing site conditions to ensure that they are in satisfactory condition for commencement of work in this section.
 - .2 Divide work into logical sections and only tear-off as much existing roof as can be made watertight in same working day to prevent damage to building interior.
 - .3 Prior to removal of any roof components, all existing openings (drains, vents, air intakes, etc.) to be covered or plugged to prevent any debris or contaminate from entering

building below. All such coverings are to be removed at end of each working day and reinstalled prior to next day's start up.

.4 Disconnect and reconnect Electrical Services and Mechanical Equipment as required.

.1 Any rooftop equipment requiring disconnection to be responsibility of Contractor in consultation with Owner unless otherwise specified elsewhere in contract documents.

.2 Existing Roof Removal:

.1 Remove existing roof components down to existing membrane in preparation for installation of new roof system.

.2 At areas designated for roof removal and replacement, remove existing projection and perimeter metal flashings, ballast, gravel, roof membrane and flashings, insulation, vapour retarder and flashings, and old appurtenances. Dispose removed items to an appropriate site for building material waste.

.3 All unused and abandoned pitch pockets, vents, curbs, sleepers, projections, etc. are to be removed from designated areas and disposed of.

.1 Obtain verification and authorization from Client before removing and disposing of any suspected unused or abandoned projections.

.2 Install new roof decking as required to close off any deck openings prior before proceeding with new roof system installation.

.3 Where existing insulation is exposed, examine insulation for any damage and deterioration required to be cut out and repaired with new compatible materials.

.3 Substrate Review:

.1 Exposed roof deck surfaces to be reviewed by Contractor with Consultant. Ensure to review entire roof area to satisfy any warranty requirements of Manufacturer of new roof membrane system.

.1 Notify Consultant of review at least forty-eight (48) hours prior to site review.

.2 Report any anomalies found that may impact soundness and structural integrity of roof system to Consultant and Owner immediately. Areas with damaged decking must be replaced or repaired before any further work may take place on that particular section.

.3 Ensure roof decks are firm, straight, smooth, dry, free of snow, ice, frost, oils, or other contaminants. Decking must be properly cleaned of any dust and debris prior to proceeding with new installation. Test whether specified adhesion to deck will be obtained where required.

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

.5 Verify that roof drains have been installed at proper elevations relative to finished roof surface to allow for sufficient drainage of roof surface.

.6 Review securement of existing projections and equipment (electrical conduit, gas lines, etc.). If inadequate securement is found, inform Consultant and halt work around that area until situation is rectified.

- .7 Review securement of existing plywood sheathing, wood blocking, and cant strips. Do not install new roofing unless such items are adequately secured to withstand stresses imposed by thermal movement of new roofing components.

3.5 CARPENTRY

- .1 Refer to detail drawings for carpentry requirements. Install wood blocking, plywood, and cant strips to accommodate required slopes, insulation, roofing membranes, and prefinished sheet metal and trim. Carpentry alterations to be performed to accepted trade practices.
- .2 Add new wood blocking as necessary to maintain minimum heights at perimeters and roof curbs.
 - .1 At Existing Roof Curbs: Minimum height to be 203mm (8") above finished roof membrane and at least 51mm (2.0") higher than adjacent roof perimeters, up to a maximum 460mm (1'-6") above finished roof membrane.
 - .1 At metal roof curbs: Where extension height required is greater than 102mm (4.0"), install new galvanized metal C-Channel, prefab curb extension, or prefab curb adapter or reducer to raise curb as required to suit new height.
 - .2 At Existing Parapets: Minimum height to be 102mm (4") above finished roof membrane, unless otherwise indicated on detail drawings.
- .3 Replace any seriously damaged or deteriorated wood at perimeters and projections with new construction grade spruce wood blocking or exterior grade plywood, good one side, to match existing. Determination of suitability to re-use or replace existing wood to be at discretion QA Observer.
 - .1 Ensure existing wood blocking remaining at perimeters and curbs is securely fastened to existing substrate before installing new blocking and plywood.
- .4 Install wood blocking as required to ensure that all roof curbs and sleepers supporting H.V.A.C. and mechanical equipment are level.
- .5 Wood to wood, wood to metal, wood to masonry or concrete to be secured at 305mm (12") on center with alternating fasteners staggered.
 - .1 Avoid protruding fastener heads. Where possible, all fasteners to be flush with or slightly sunk below surface of wood blocking being secured.
- .6 All wood blocking and plywood is to be considered part of roof, and to be made watertight by end of each work day to eliminate moisture infiltration into roof system.

3.6 OVERLAY

- .1 Install a continuous layer of overlay boards over existing membrane in accordance with manufacturer's instructions.
- .2 Where applicable, install tapered insulation according to layout on reviewed shop drawings and roof plan drawing(s). Report any discrepancies to Consultant before proceeding.
- .3 Do not install more insulation board than can be covered with membrane by end of work day or before onset of inclement weather.
- .4 Do not install warped, curled, damaged, or wet insulation boards.
- .5 Mechanically fasten overlay boards with specified fasteners and plates to metal roof deck meeting CSA 123.21 requirements.

- .1 Mechanical fasteners to penetrate decking only, by no less than 19mm ($\frac{3}{4}$ ") and by no more than 25mm (1").
- .2 Check underside of deck before installation to eliminate damaging any existing conditions below deck.
- .3 Fastening density for the overlay board to be, minimum:
 - .1 One fastener per 2 sq. ft. 8'-0" around the perimeter areas
 - .2 One fastener per 1 sq. ft. 8'-0" x 8'-0" at each corner
 - .3 One fastener per 4 sq. ft. throughout the field of the roof
- .6 At All Roof Drains: At all existing roof drain locations, delete a section of overlay insulation in a 4' x 4' (1.2m x 1.2m) area centered around each drain.
- .7 Install overlay insulation boards in parallel rows and butt tightly together with joints staggered by one half board length. Where multiple layers of insulation are required, stagger all board joints at least 305mm (12") between rows.
- .8 Custom cut insulation boards as required at perimeters and projections to suit. Field cuts to be neat and provide tight fit around penetrations, projections, and at perimeters.
- .9 For uneven surfaces, trimming or slitting of boards may be necessary. Fill all gaps larger than 3mm ($\frac{1}{8}$ ") with insulation slivers.
- .10 Drain Sumps: At all roof drain locations, provide new modified bitumen base sheet membrane over drain sump area. Prime substrate as required and overlap new base sheet tie-in membrane onto mineral fibre insulation around sump by min. 203mm (8.0").
- .11 When using Base Sheet Laminated Insulation Boards:
 - .1 Side Joints: Adhere and heat weld with hot air gun or torch to satisfaction of QA Observer all side laps of modified bitumen base sheet membrane.
 - .2 End Joints: Install 330mm (13") wide self adhered, modified bitumen base sheet cover strips centered over panel end joints. Cover strips to extend a min. of 152mm (6") past each side of end joint.
 - .3 Ensure all laps and seams in base sheet membrane are well bonded to form a single continuous waterproof membrane barrier.

3.7 MODIFIED BITUMEN MEMBRANE APPLICATION

- .1 Install a two (2) ply SBS modified bitumen membrane system over top of prepared substrate. Base sheet field membrane factory laminated to cover board with self adhered base sheet flashings. Cap sheet field membrane and cap sheet flashings to be torch applied.
- .2 All membrane materials are to be supplied by same manufacturer in order to meet material compatibility requirements necessary to achieve required System Warranty.
- .3 All membrane installations to conform to membrane manufacturer's printed literature, recommendations, guidelines, and instructions.
- .4 All membrane and flashing applications to be free of sags, blisters, wrinkles, and fish-mouths.
- .5 General Requirements for Application:

- .1 Tools, Rollers, & Squeegees: Use membrane manufacture's recommended tools and accessories. Keep tools clean during performance of work and frequently replace application roller tips and squeegee heads with new when clogged.
- .2 Surface Review: Apply over wood, metal, gypsum board and concrete decks which are clean, smooth, and free of snow, ice, moisture, and debris. Concrete decks must have all holes filled with quick drying cement and rough patches removed.
- .3 Application of Primer: Priming is required for all substrates prior to installation. Avoid pooling primer and allow to completely dry before membrane installation. Drying time will vary according to absorptive qualities of material and ambient weather conditions.
- .4 First Roll Starting Point: Base sheet to begin at drain level with side lap aligned to centre of drain. Run rolls perpendicular to slope. Cap sheet to be installed over base sheet covering base sheet overlap. Center of cap sheet to align up with centre of drain.
- .5 Relaxing of Roll Membrane: ALL ROLL MEMBRANES ARE TO BE FULLY UNROLLED AND ALLOWED TO RELAX FOR A MIN. OF 15 MINUTES PRIOR TO INSTALLATION. Wait longer in cooler temperatures. Trace zig-zag pattern with torch as recommended by manufacturer over membranes that are covered with thermofusible film.
- .6 Alignment of Rolls: Completely unroll first roll and align with edge of roof. Reroll membrane from both ends to centre and apply as per specifications.
- .7 Staggering of Sheets: End laps between base and cap sheets to be offset a min. of 610mm (24"). Side laps between base and cap sheets to be offset a min. of 305mm (12"), centered alignment preferred. Laps in same membrane layer to be min. 76mm (3") wide for side laps and min. 305mm (12") wide for end laps. When selvage side laps of base and cap sheets are unequal, adjust cap roll width occasionally to maintain alignment.
- .8 Procedure to Seal Voids: Where voids are created by overlapping rolls of membrane, cut off corner of selvage edge where covered by next roll of material.
- .9 Selvage Edge Protection: Granules along edge of membrane to be primed prior to application of adhesive to provide good adhesion of laps.
- .10 Membrane Flashings: Base flashings to extend min. 102mm (4") onto field of roof. Cap flashings to overlap base sheet flashings and extend min. 152mm (6") onto field or roof. Use wider overlap widths where required by manufacturer for warranty requirements.
- .11 Bleed-Out at Seams: When torch applying membrane, provide consistent, continuous bleed-out along all seams, no less 3mm (1/8") and no greater than 6mm (1/4") in width.
- .12 All Seams: Check all seams in all sheets with a round nosed trowel while work is in progress. Repair found deficiencies immediately and before continuing roof installation.
- .13 Base Sheet Seams: Butter all seams and laps. Provide additional bitumen at point of 90° upturns in base sheet flashings. Recheck self adhered membrane seams left exposed within forty-eight (48) hours of installation to repair any revealed seam deficiencies with clean, heated trowel.
- .14 Cap Sheet Seams: At all end laps and membrane flashing overlaps, degranulate area (embed granules) of surface to be bonded by embedding ceramic granules into bitumen of membrane using clean, heated trowel to push in. Measure and use straight chalk lines to mark outline of areas requiring degranulation. Achieve a uniform black surface of bitumen across 100% of embedment areas to be overlapped.

- .15 Reinforcement: Required at all corners, vents, drains, HVAC units, and gravel stops.
- .16 Primer Application: Sanded membrane left exposed overnight or longer to be primed before continuing membrane installation to ensure good adhesion.
- .17 Torch Application: During windy periods, slow application rate down to ensure good bond with proper level of heat. Stop and periodically check for proper adhesion.
- .6 Correction Requirements for Defects and Deficiencies:
 - .1 Delamination: Membrane may not be fully bonded to substrate due to:
 - .1 Moisture present on substrate,
 - .2 Dirt, dust, or other contaminate on substrate acting as a parting agent,
 - .3 Inadequate application of primer or adhesive.
 - .2 Misalignment: Alignment of row to starting line is lost due to swerving during application or to roll not being unrolled, aligned, and rerolled straight prior to application.
 - .1 Misaligned roll to be cut at point where swerve begins and restarted.
 - .2 Ensure membrane rolls are allowed to relax. Use heat in a zig-zag pattern to relax thermo-fusible films and membrane reinforcement.
 - .3 Ensure pressure is applied evenly across roll during application to avoid drifting.
 - .3 Wrinkles: Undulations located on surface of membrane after it has been applied:
 - .1 Cross-Sheet Undulations: Waves in membrane due to installation in a stop and go fashion.
 - .2 Continuous Ridging of Membrane: Formed by movement of substrate underneath membrane. Ensure substrate is secure before continuing.
 - .4 Blisters: Pocket of air trapped under membrane where full adhesion was not achieved or trapped moisture released from substrate:
 - .1 Remove and repair significant blisters.
 - .2 Cut blister and adhere any loose membrane.
 - .3 Apply patch membrane over repair area, extend a min. 152mm (6") on all sides.
 - .5 Membrane Patches: Cap sheet membrane patches to be installed from seam to seam. Minimum size of membrane patch to be 915 x 915 mm (36" x 36").
- .7 On Base Sheet Laminated Cover Board: Install SBS modified bitumen base sheet flashings over factory laminated base sheet field membrane preinstalled to cover board panels. Additional layer of base sheet field membrane is not required. Install granular cap sheet and cap sheet flashings over base sheet layer, torch applied.
- .8 Base Sheet Flashing, Self Adhered Installation:
 - .1 Where required, prime concrete and wood surfaces at roof projections and around perimeter to receive new base sheet membrane flashings.

- .2 Install membrane flashing onto substrate in strips one membrane roll wide (40" or 1m) and extend over perimeters as shown on detail drawings
- .3 Field measure and cut flashing membrane to length required for flashing at each detail and roll up for installation.
- .4 Install base sheet flashing starting at outside face of perimeter, running across perimeter detail, and down onto flat of roof.
- .5 Once aligned in position, peel back a portion of release sheet and press membrane onto substrate for initial adherence. Hold membrane flashing tight and peel back release sheet by pulling diagonally.
- .6 Overlap each preceding flashing sheet by min. 76mm (3") on side laps and align bottom edge to a chalk reference line along base sheet membrane. Lap membrane flashing onto field membrane a minimum 102mm (4").
- .7 Use a membrane manufacturer recommended weighted roller to press membrane down onto substrate including laps. Finish by aligning edge of roller with lower end of side laps and rolling up membrane.
 - .1 Do not cut membrane to remove trapped air bubbles. Squeeze out air bubbles by pushing roller to edge of laps.
- .8 Provide preliminary securement of membrane on outside edge or perimeters before installation of finish metal flashings and trim. Fasten top edge of membrane flashings on outside face of perimeter details with round top nails spaced every 229mm (9") o/c.
- .9 All side and end laps of base sheet flashing to be heat welded as required with hot air gun or torch to satisfaction of QA Observer.
- .9 Cap Sheet Field Membrane, Torch Installation:
 - .1 Complete installation of base sheet flashing prior to installing membrane cap sheet and cap sheet flashings.
 - .2 Field measure and cut membrane to length of run required and roll up for installation.
 - .3 Starting at low point on roof, perpendicular to slope, unroll cap sheet, align and re-roll from both ends.
 - .4 Unroll and install cap sheet carefully in straight and parallel rows keeping majority of flame on membrane roll.
 - .5 Cap sheet to be torched across flat of roof, overtop of base sheet, and terminated at perimeters and vertical surfaces ensuring a good bond.
 - .6 Lap sheets 76mm (3") for side laps and a minimum 152mm (6") for end laps. Offset joints in cap sheet 305mm (12") minimum from those of base sheet.
 - .7 All side and end laps of cap sheet to be heat welded with hot air gun to satisfaction of Consultant.
- .10 Cap Sheet Flashing, Torch Installation:
 - .1 Cap sheet membrane flashing to be torched up and over perimeter details.
 - .2 Install membrane flashing onto substrate in strips one membrane roll wide (40" or 1m) and extend up perimeters as shown on detail drawings

- .3 Field measure and cut flashing membrane to length required for flashing at each detail and roll up for installation.
- .4 Set cap sheet to offset base sheet flashing joints by 50% and extend a minimum of 152mm (6") onto roof. All end lap joints to be a minimum 76mm (3").
- .5 Align bottom edge to a chalk reference line along cap sheet membrane.
- .6 Install cap sheet flashing onto field membrane a minimum 102mm (4") at base of perimeter detail. Run flashing up vertical and across perimeter detail to outside edge.
- .7 Overlap each preceding cap sheet flashing sheet by min. 76mm (3") on side laps. Offset joints in cap sheet flashing 305mm (12") minimum from those of base sheet flashing.
- .8 Properly secure flashings to their support, without sags, blisters, fish-mouths or wrinkles with terminations as indicated on drawings and details.
- .9 All side and end laps of cap sheet flashing to be heat welded with hot air gun to satisfaction of Consultant.

3.8 LIQUID APPLIED PMMA RESIN FLASHINGS

- .1 Where specifically indicated in detail drawings and at any junctions where conventional installation of membrane flashings are not feasible, install new liquid applied resin flashing system.
- .2 Resin system to be a layered application consisting of two coats of thixotropic catalyzed polymethylmethacrylate (PMMA) resin encapsulating a layer of polyester fleece reinforcement.
- .3 Installation of liquid applied flashing system to follow in STRICT ACCORDANCE with manufacturer's written instructions.
- .4 Ensure that substrates are free from gross irregularities, loose, unsound or foreign material such as dirt, ice, snow, water, grease, oil, bituminous products, release agents, laitance, paint, loose particles friable matter, rust or any other material that would be detrimental to adhesion of catalyzed primer and/or resin to substrate.
 - .1 Some surfaces may require scarification, shot-blasting, or grinding to achieve a suitable substrate. Wipe surfaces with a clean cloth saturated with specified cleaner/solvent to remove grease, oils or dust that may affect adhesion and to cured PMMA surfaces to receive a subsequent coat of resin.
 - .2 Concrete substrates to receive an application of specified PMMA roofing system to have a maximum moisture content of 6% and a maximum internal relative humidity of 75%.
- .5 Preparation/Mixing/Catalyzing Resin Products:
 - .1 Pour desired quantity of resin into a clean container and using a spiral mixer or mixing paddle, stir liquid for time period specified by resin manufacturer.
 - .2 Calculate amount of catalyst powder needed using manufacturer's guidelines and add pre-measured catalyst to resin component.
 - .3 Mix again for time period specified by resin manufacturer, ensuring that product is free from swirls and bubbles.
 - .4 Ensure that air is not entrained into product during mixing process. To avoid aeration, do not use a spiral mixer unless spiral section of mixer can be fully contained in liquid during mixing process.

- .5 Mix only enough product to ensure it can be applied before expiration of resin pot life.
- .6 Primer Application:
 - .1 Apply primer resin using a roller or brush at minimum rate specified by primer manufacturer over poured reinforced concrete substrates.
 - .2 Apply primer resin using a roller or brush at increased rate specified by primer manufacturer over DensDeck, DensDeck Prime, and granule surfaced membrane substrates.
 - .3 Increase application rates over other absorbent substrates. Do not let resin pool or pond. Do not under-apply or over-apply primers as this may interfere with proper primer catalyzation.
 - .4 Make allowances for saturation of roller covers and application equipment.
- .7 Paste Application:
 - .1 Allow primer to set and apply catalyzed preparation paste using a trowel.
 - .2 Before application of resin over catalyzed paste surface, specified cleaner/solvent, wipe surface of paste using specified cleaner/solvent and allow to dry.
 - .3 Treat surface again if not followed up by resin application within 60 minutes.
- .8 Flashing Membrane Application:
 - .1 Using masking tape, mask perimeter of area to receive flashing system.
 - .2 Apply resin primer to substrates requiring additional preparation and allow primer to set.
 - .3 Pre-cut fleece to ensure a proper fit at transitions and corners prior to membrane application.
 - .4 Apply an even, generous base coat of flashing resin using a roller at minimum rate specified by resin manufacturer to prepared surfaces requiring flashing coverage.
 - .5 Work fleece into wet, catalyzed resin using a brush or roller to fully embed fleece in resin and remove trapped air.
 - .6 Lap fleece layers a minimum of 51mm (2") and apply an additional coat of catalyzed resin between layers of overlapping fleece.
 - .7 Again using a roller, apply an even top coat of catalyzed resin at minimum rate specified by resin manufacturer immediately following embedment of fleece, ensuring full saturation of fleece.
 - .8 Ensure that flashing resin is applied to extend a 6mm (0.25") beyond fleece. Remove tape before catalyzed resin sets. Make allowances for saturation of roller covers and application equipment.
 - .9 Should work be interrupted for more than 12 hours or surface of catalyzed resin becomes dirty or contaminated by elements, wipe surface to be lapped with new flashing resin using specified cleaner/solvent.
 - .10 Allow surface to dry for a minimum 20 minutes and a maximum 60 minutes before continuing work.

3.9 ROOF PENETRATIONS & ACCESSORIES

- .1 Install vent stack flashings, support flashings, and other roof penetration flashings, and seal with roof membrane in accordance with Manufacturer's instructions and as indicated on detail drawings.
 - .1 Prime all metal flanges with modified bitumen compatible primer, and allow any solvents to flash-off and dry completely prior to installation.
 - .2 Set metal flange in bed of manufacturer recommended and system compatible roofing cement applied over base sheet membrane, ensuring a positive bond.
 - .3 Install an additional ply of base sheet membrane flashing over metal flange prior to installing cap sheet membrane. Additional ply of base membrane to extend a minimum of 152mm (6") past all edges of metal flange.
 - .4 Install cap sheet ply over base flashing ensuring a full bond to base ply membrane.
 - .5 Apply continuous bead of manufacturer's recommended and system compatible sealant around penetration at point where membrane terminates.

3.10 ROOF DRAINS

- .1 General Practice:
 - .1 Ensure existing roof drains, rain gutters, and down pipes are clear of debris and are free flowing prior to installation of new roof system.
 - .1 Any blockages are to be reported prior to start of Work. Once Work has begun, Contractor assumes responsibility for free flowing drains and clearing blockages at no additional cost to Owner.
 - .2 Where required for new roof drains and interior plumbing, Contractor to provide interior plumbing and hook-up to existing storm water drainage system and co-ordinate installation of same with Owner.
 - .2 Prior to installation of new roof, ensure that all drains are located at a height where new roof system is able to clear majority of roof top water caused by rainfall within a seventy-two (72) hour period.
 - .3 Once work has begun, no roof area to be left overnight without adequate provision for drainage.
 - .4 Install drains in accordance with detail drawings and as per manufacturer's written instructions and guidelines.
- .2 Where applicable, downpipes to be connected to all existing subsurface drains. Fabricate and install a new, fully soldered square to round transition to attach new downpipe to existing subsurface drain as required.
- .3 Roof Drain Installation:
 - .1 Drain Inserts (If required **and approved in advance** by the Consultant): Menzies Clamp Tite spun copper or aluminum drains. Flange to be secured to substrate with min. four (4) fasteners per drain as required to properly secure drain body.
 - .1 Affix Fernco connector seal to bottom of drain stem before insert into existing storm drainage pipe.

- .2 Set metal flange of drain body into continuous bed of manufacturer recommended and system compatible roofing cement applied over base sheet membrane.
- .3 Mechanically secure drain body to deck and substrate with min. four (4) fasteners per drain through drain flange or by underdeck clamping ring.
- .2 At all existing roof drains employing control flow weir devices, it is mandatory to reinstate existing devices or provide new control flow devices with equivalent flow rates inside new roof drains.
- .3 Install target patch of membrane reinforcement over metal drain flange. Use a square of 1m x 1m (39" x 39") base sheet membrane and install over drain at a 45° angle to direction of base sheet rolls.
- .4 Install cap sheet over base sheet membrane with drain in center of roll and without seams in drain area.
 - .1 All end laps of cap sheet to be min. 915mm (36") away from drain.
 - .2 Where seams of cap sheet do not align properly with drain location, install cap sheet over drain area first and picture-frame cap sheet into remainder of roof.
 - .3 At drain sump areas larger than 1.2m x 1.2m (4' x 4'), install cap sheet over sump area first without any endlaps and picture-frame into remainder of roof.
- .5 Place Clamping Ring over raised bolt studs. Install stainless steel self locking nuts to tighten Clamping Ring against membrane flashings until secure.
- .6 Install ballast guard strainer dome and secure with cotterless pin or wing nut screw.

3.11 MISCELLANEOUS MECHANICAL & ELECTRICAL

- .1 Unless stated in writing elsewhere, Contractor responsible for all Mechanical and Electrical Work required to perform complete installation of new roofing. Any and all costs associated with HVAC disconnection, lifting, removal, and reconnection, including modification of gas and conduit lines, to be included in Bid Pricing, unless specified otherwise on Bid Form.
 - .1 Co-ordinate work with General, if applicable and other Sub-Contractor trades that may be present on area.
 - .2 Coordinate any planned disruptions in advance with Owner to minimize inconvenience.
- .2 HVAC and Rooftop Equipment: Disconnect, lift (if necessary), modify, and reconnect all Heating, Ventilation, Air Conditioning, and Mechanical units as required to for new roof system.
 - .1 Modify existing sleepers, curbs, and supports as required to suit new roof system installation and configuration as detailed. Ensure modified sleepers, curbs, and supports are made watertight with new membrane and flashings as required.
 - .2 Remove and dispose of identified and designated abandoned, redundant, and unused HVAC equipment from roof and worksite.
- .3 Gas Lines and Conduits: Disconnect, modify, and reconnect all gas lines, electrical lines, and conduits as required to suit new roof installation height and configuration of projection detailing.
 - .1 All gas line work must be performed by a qualified Gas Fitter and must conform to requirements of CSA B149.1-10.

- .2 Re-install gas lines and conduits at a height of 150mm (6") to 200mm (8") above finished roof surface. Secure all loose cabling and conduits off surface of roof membrane.
- .3 Ensure that all gas line penetrations are separated from all electrical line penetrations with their own roof flashing supports. Provide any new sleeves, goosenecks, or curbs required using IRC Group approved flashing supports and installation methods.
- .4 At threaded gas line piping, which cannot be permanently enclosed or covered, construct new insulated and waterproof dog house detail with removable lid for periodic thread inspection.
- .5 Paint all gas lines on areas of roof work with exterior grade, yellow paint for metal surfaces; Rust Paint by Tremclad or IRC Group approved equivalent.
- .4 Underdeck Securement: Where existing sections of roof decking are to be removed, ensure any cabling, conduits, and attachments (plumbing, electrical wiring, lighting fixtures, etc.) secured to underside are disconnected, removed, and relocated. Notify Owner's Representative, if necessary, to have interior services disconnected, removed, and relocated by Owner.
- .5 Temporary Security: Provide overnight security, at no additional cost to Owner, where removal of any venting or HVAC equipment results with an opening in roof deck that cannot be permanently sealed on same day. Security company must be preapproved by both Owner and Consultant in advance.

3.12 TEMPORARY WATER CUT-OFFS

- .1 All membrane flashings to be installed concurrently with roof membrane in order to keep roof system watertight during performance of work.
- .2 Temporary waterproof seals to be placed on daily work as required. All temporary water-stops to be constructed to provide a one hundred (100) percent watertight seal.
- .3 New roofing membrane to be carried into water-stop. Water-stop to be sealed to roof deck and/or substrate to prevent water travel and infiltration under new or existing roofing.
- .4 Edge of roof membrane to be sealed in a continuous heavy application of sealant. Temporary seals to be removed and cleaned up before proceeding with remaining work.
- .5 When work resumes, cut out and dispose of all contaminated membrane. All sealant, contaminated membrane, insulation fillers, etc. to be removed from work area and properly disposed of offsite. Reuse of these materials in new work is strictly prohibited.
- .6 If inclement weather occurs while a temporary water-stop is in place, Contractor to provide all necessary labour required to monitor situation and maintain watertight condition.
- .7 If any water is allowed to penetrate under newly completed roofing, then affected area to be cut out, removed, and replaced with new materials at Contractor's own expense.

3.13 METAL FLASHINGS

- .1 On All Roof Replacement Areas: After installation of roof membrane and membrane flashings, new perimeter metal and metal flashings to be installed as detailed in Section 07 62 00 and as indicated on detail drawings.

3.14 SEALANTS

- .1 On All Roof Replacement Areas: After installation of roof membrane and membrane flashings, install sealants as per Section 07 92 00 – Sealants and as recommended by membrane manufacturer.

3.15 CLEAN-UP

- .1 On All Roof Replacement Areas: Clean up and remove from job site on a daily basis, all rubbish and surplus materials resulting from this work.
- .2 Drag a magnetic bar across work area and grounds to ensure removal of all discarded fasteners and sharp metal debris.

END OF SECTION - 07 52 10

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PART 1 - GENERAL

1.1 SECTION INCLUDES

- .1 Supply and installation of new prefinished sheet metal flashings and counter flashings to complete roof system installation. Unless specifically indicated otherwise, all references to Sheet Metal Flashings in specifications and drawings to refer to new prepainted steel.
- .2 Form, break, and install metal flashings to suit perimeter and projection details as specified and as shown on detail drawings.
- .3 Coordination of all work in this section with other sections and trades as required to ensure proper installation of specified components.

1.2 RELATED SECTIONS

- .1 Section 01 11 00 – Summary of Work
- .2 Section 02 22 50 – Selective Demolition and Removal
- .3 Section 07 52 10 – SBS Modified Bitumen Membrane Roofing
- .4 Section 07 92 00 – Joint Sealants

1.3 REFERENCES

- .1 Latest edition of all listed references; most stringent requirements to govern in conflicts:
 - .1 American National Standards Institute/Single Ply Roofing Industry (ANSI/SPRI):
 - .1 ES-1: Wind Design Standard for Edge Systems (Low Slope Roofing).
 - .2 American Society for Testing and Materials (ASTM):
 - .1 A606: Steel Sheet, High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, with Improved Atmospheric Corrosion Resistance.
 - .2 A653/A653M: Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by Hot-Dip Process.
 - .3 A792/A792M: Steel Sheet, 55% Alum-Zinc Alloy-Coated by Hot-Dip Process.
 - .3 Canadian Standards Association (CAN/CSA):
 - .1 B111: Wire Nails, Spikes and Staples.
 - .4 Canadian General Standards Board (CAN/CGSB):
 - .1 51.32M: Sheathing, Membrane, Breather Type.
 - .2 93.1-M: Sheet, Aluminum Alloy, Prefinished.
 - .5 Sheet Metal and Air Conditioning Contractors National Association (SMACNA):
 - .1 Architectural Sheet Metal Manual
 - .6 Roofing Contractors Association of BC (RCABC): Roofing Manual.
 - .7 Canadian Roofing Contractors Association (CRCA): Roofing and Waterproofing Manual.

1.4 SUBMITTALS

- .1 Warranty: Provide Owner with a Material and Workmanship Warranty for sheet metal flashing work on Contractor's letterhead, signed and authorized.
- .2 Compatibility: Provide written certification to Consultant stating that materials and components of roofing system and wall system, as assembled in system are compatible.
- .3 Mock-ups: Create mock-up sample of typical metal flashing detail and related accessories for review by Consultant.
 - .1 Provide any additional mock-up samples as reasonably requested by Consultant.
 - .2 Finished and approved mock-ups to remain as example of standard to be met, and may remain in place as part of installed and completed work.

1.5 CONTRACTOR QUALIFICATIONS

- .1 Contractor and his staff must be certified by membrane Manufacturer and be pre-approved by Owner and Consultant.
- .2 Contractor must be a member in good standing with Roofing Contractors Association of BC (RCABC) and have a minimum ten (10) years relevant experience with similar roof materials.

1.6 STORAGE AND HANDLING

- .1 Do not store metals in direct contact with earth, road surface, roof deck, or other metals.
- .2 Place suitable supports or pallets under metal stock upon delivery. Protect metal from scratches, dents, punctures, and moisture.
- .3 Store caulking and sealants at +5°C minimum.
- .4 Handle and store products in a manner to prevent damage, oxidization, and deterioration.
- .5 Remove and replace damaged products at own expense and to satisfaction of Quality Assurance Observer/Consultant.
- .6 Apply materials in accordance with Manufacturer's recommendations.

1.7 SAFETY AND PROTECTION

- .1 References:
 - .1 CAN/CSA S269.2M: Access Scaffolding for Construction Purposes.
 - .2 FCC No. 301: Standard for Construction Operations.
 - .3 Comply with all safety requirements as per current printed edition of OHSA, and with RCABC standards.
- .2 Solvents, Adhesives and Membranes
 - .1 Store only enough solvents and adhesives on roof for same day's use.
 - .2 Manufacturer supplied adhesives should be stored in their overnight containers. Minimum temperature for solvent based adhesives and primers is -5°C.
- .3 Hoisting:

- .1 Protect walls and roof perimeters where hoisting is required.
- .2 Protect roofs from damage due to traffic and material handling until completion of project.

1.8 WARRANTY

- .1 Sheet Metal Flashings:
 - .1 Included in RCABC Ten (10) Year RoofStar Guarantee.

1.9 QUALITY ASSURANCE OBSERVATION

- .1 IRC Building Sciences Group, hereafter known as "Observer", is an independent Quality Assurance Observation agency appointed by Owner to observe installation of sheet metal flashing Work:
 - .1 Arrange Prestart site meeting with Observer no more than three (3) weeks prior to commencement of Work on site. Obtain Observer's instructions and reference procedures to be followed on project.
 - .2 Provide to Observer date when work will begin, at least forty-eight (48) hours prior to commencement of Work for phase.
 - .3 Arrange Final Review of installed work with QA Observer, and where required with membrane Manufacturer's technical representative.
- .2 Cooperate with Observer and afford all facilities necessary to permit full Quality Assurance Observations during performance of Work. Act immediately on instructions given by Observer.
- .3 When required, provide cut-outs and samples in field where directed by Observer and make good without additional cost to Owner.
- .4 When initial tests and observations reveal work failing to meet contract requirements, pay for any additional testing and observations required by Observer or third party testing agency for correction of Work, without additional cost to Owner.
- .5 Copies of Q.A. Observation Reports to be issued by Observer to Owner and Prime Contractor.

1.10 PREPARATORY WORK

- .1 Examine drawings and specifications and any other necessary data which may affect installation to determine extent of Work involved in this Section. No additional claims against Owner to be allowed resulting from failure to ascertain full extent of Work required as described or implied.
- .2 Prior to application of flashings, review roof perimeters and projections.
- .3 Examine installed membrane flashings for any defect of level or construction before proceeding with work.
- .4 Advise Consultant of any deficiencies that may affect performance of roof system and any deviations from specified tolerances.
- .5 Defective or improper work must be corrected before proceeding with installation of sheet metal flashings.

PART 2 - PRODUCTS

2.1 PRE-FINISHED METAL FLASHINGS

- .1 Compatibility between materials is essential. Use only materials that are known to be compatible when incorporated in a completed assembly.
- .2 Prefinished Metal Flashing: 24 gauge (0.026" or 0.66mm) steel with G90 (Z275) zinc coating conforming to ASTM A653A/A653M. Surface with Dofasco Perspectra Series or Valspar WeatherX factory-baked finish. Colour selected by Owner from Manufacturer's standard colour range.
- .3 Cleats and Hook Strips Not Otherwise Specified: Two gauges heavier of material matching that of flashing being employed; minimum 22 gauge (0.032" or 0.82mm).

2.2 JOINTING

- .1 Linear mating of sections of cap flashings and parapet flashings to be with an "S" lock joint.
- .2 Corner mating to be completed with a standing seam.

2.3 ACCESSORIES

- .1 Underlay: Smooth unsaturated quality rosin sized paper weighing not less than 0.3 Kg/m² (6 lbs per 100 ft²) unless otherwise shown to CSA A123.3M.
- .2 Joint Filler: Extruded polyethylene, closed cell, Shore A hardness 20, tensile strength 140 to 210 kilopascals (20 to 30 psi), 25% to 30% wider than joint to be caulked.
- .3 Touch-up paint: As recommended by pre-finished material manufacturer.
- .4 Bituminous Paint: Gilsonite asphalt 910-02 by Bakelite to CGSB 1-GP-108 Type II.
- .5 Sealants: as per Section 07920.

2.4 FASTENERS

- .1 Use galvanized, copper, aluminum or stainless steel nails or screws most compatible with materials being employed. Use fasteners as most generally suitable to not cause a galvanic reaction.
- .2 Fasteners to Wood: Nails, annular threaded of length to penetrate into bases minimum 1" (25 mm) or No. 8 screws to penetrate surface by min. 19 mm (0.75"), at 600 mm (24") o.c.
- .3 Exposed Fasteners: Nylon headed, No.14 Colormate fasteners by Leland Industries with 11mm (7/16") hex heads, self tapping or drilling point tips. Length to suit installation and with colour to match prepainted metal.
- .4 Masonry Fasteners: Tapcon, Gripcon or Rawl spike sized to penetrate concrete 38mm (1.5") minimum unless otherwise shown.
- .5 Wedges: Rolled plumber sheet lead. Secure metal flashings on inside and should be secured with No.10 galvanized screws through neoprene washers at 760 mm (30") o.c.
- .6 Masonry Anchors: Rawl lead lags for screws as recommended by manufacturer.
- .7 Pop Rivets (Only where approved by Consultant): 3mm (0.125") shank diameter, all stainless steel, blind pop rivets meeting ASME/ANSI B18.1.1. Head diameter to be 6mm (0.25") and with a grip range of 4.7mm to 6.4mm (0.1875 to 0.25"). Body and mandrel to be constructed from high-shear, 300 series stainless steel.

2.5 FABRICATION

- .1 Fabricate all possible work in shop in 2.4m (8') lengths by brake forming, bench cutting, drilling and shaping. On high vertical sections install metal in 1.2m (4') section as specified and detailed. Profiled metal to be cold rolled.
- .2 On coping or flashing with a horizontal dimension of 406mm (16") or greater, fabricate metal flashings in maximum 1.2m (4') sections.
- .3 On coping or flashing with a horizontal dimension of 508mm (20") or greater, use 25mm (1") lock folded standing seam joints.
- .4 Form bends with straight sharp lines, angles and corners into true planes, free from twists, buckles, dents and other visual distortions.
- .5 Double-back exposed metal edges at least 13mm (0.5"). Raw edges will not be permitted.
- .6 Supply all accessories required for installation of sheet metal work of this Section. Fabricate accessories of same materials to which they will be used.

PART 3 - EXECUTION

3.1 INSTALLATION

- .1 Install sheet metal flashings at copings, walls, joints, roof openings and other components required to protect membrane flashings as shown on drawings, or otherwise required.
- .2 Install continuous concealed hook strips at all exterior faces. Install cleats as required to protect membrane roofs and flashings from damage at lock joints and as required to permanently hold flashing in place. Secure cleats at 152mm (6") on center in V-pattern, keeping lower fastener within 32mm (1.25") of drip edge.
- .3 Sheet metal work to be installed to cover entire area it protects and to be watertight under all service and weather conditions.
- .4 Install in a uniform manner, level, true to line, free of dents, warping and distortion.
- .5 Back-paint at rate of 0.12L/m² (¼ Gal/100 ft²) with bituminous paint, sheet metal that comes into contact with another kind of metal, masonry or concrete.
- .6 Install sheet metal with concealed fasteners at lock joints. Exposed fastening will be permitted only with approval of Consultant. Space all fasteners evenly in an approved manner. Use lead plugs and screws where fasteners are exposed, otherwise use concrete drive fasteners where metal flashings are installed over concrete or masonry.
- .7 Install underlay under sheet metal, installed directly over wood or masonry surfaces. Overlap joints 51mm (2") and turn up 76mm (3") at edges where horizontal surfaces intersect vertical planes.
- .8 Join sheet metal by "S" lock seams, to permit thermal movement. Space joints evenly where exposed. Form inside and outside corners by means of raised seams. Lock seams to ensure water tightness. Do not use pop rivets.
- .9 Slope all metal to interior to maintain minimum 8% slope. Do not form open joints or pockets that fail to drain water.
- .10 Caulk all open sheet metal joints. Solder corners and other locations as required for a permanent waterproof connection.

- .11 Where existing reglets can not be reused, provide new reglets sized minimum 10mm (3/8") wide, 25mm (1") deep and to suit site conditions.
- .12 Clean reglets free of contaminates and dust.
- .13 Wedge flashings into reglet joints with lead wedges at 229mm (9") o.c. set minimum 6mm (¼") from masonry surface.
- .14 At reglets wider than 10mm (3/8") and deeper than 19mm (¾") provide polyethylene rod, 25% wider than joint width. Caulk all reglets to provide a continuous waterproof seal. Use colour to match materials. Conform to manufacturer's latest printed recommendations for use of products being employed.
- .15 Carry flashings out onto roof minimum 76mm (3").
- .16 Prepare mock-up installations of metal flashing details for approval by QA Observer prior to installation of sheet metal flashings.

3.2 FINISH

- .1 At project's conclusion, leave surface and adjacent work areas free of damage and clean of debris. Finished surfaces of formed metal flashings to be free of oil canning, dents and be perfectly colour matched.
- .2 Changes in colour between sheets and dented or oil canned surfaces that detract from visual appearance of finished product will be rejected. Remove and replace damaged, defaced or defective work.
- .3 Paint all exposed metal due to cutting.
- .4 After erection touch-up finish surfaces damaged during handling and erection in conformance with manufacturer's recommendations. Refinish shop applied finishes as approved by Consultant.
- .5 Remove deposits or protections and wash metals left unpainted and exposed to view as specified by metal manufacturer.

3.3 CLEAN-UP

- .1 Daily as work proceeds and on completion, remove all surplus materials and debris resulting from foregoing work.
- .2 Drag a magnetic bar across work area and grounds to ensure removal of all discarded fasteners and sharp metal debris.
- .3 Remove all stains, caulking or other adhesive from all affected surfaces.

END OF SECTION - 07 62 00

PART 1 - GENERAL

1.1 RELATED SECTIONS

- .1 Section 01 11 00 – Summary of Work
- .2 Section 02 22 50 – Selective Demolition and Removal
- .3 Section 07 52 10 – SBS Modified Bituminous Roofing Membrane
- .4 Section 07 62 00 – Prefinished Sheet Metal Flashing & Trim

1.2 REFERENCES

Latest edition of all listed references to apply:

- .1 ASTM C920 – Elastomeric Joint Sealants
- .2 CAN/CGSB-19.13 – Sealing Compound, One-component, Elastomeric, Chemical Curing
- .3 Sealants: Professionals' Guide, Sealant, Waterproofing and Restoration Institute
- .4 SWRI (Sealant, Waterproofing and Restoration Institute) – Sealant and Caulking Guide Specification

1.3 QUALITY ASSURANCE OBSERVATION

- .1 Observation of work will be carried out by designated QA Observer.
- .2 Prior to mobilizing on site, prepare and install sealant samples for adhesion testing, a minimum of two (2) samples for each substrate combination, according to manufacturers written guidelines. Test sealant in contact with samples of materials to be caulked to ensure that proper adhesion will be obtained and no staining of material will result. Testing to be completed prior to mobilization on site. Do not proceed with Work until samples have been approved.
- .3 Adhesion tests on new sealant will be performed at random locations at discretion of Owner's representative. Any work that is found to be sub-standard, is to be removed and replaced at no cost to Owner. Contractor is to assist with sealant adhesion tests as directed.
- .4 Execute Work of this Section by Subcontractors approved by manufacturers of materials incorporated in Work; who has equipment, adequate for Project, and skilled tradesmen to perform it expeditiously; and is known to have been responsible for satisfactory installations similar to that specified during a period of at least immediate past five years.
- .5 Remove sealant and re-caulk disapproved joints.
- .6 Approved joints will establish minimum acceptable quality of workmanship and will serve as standard by which subsequent Work will be compared for Acceptance.

1.4 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver and store materials in original wrappings and containers with manufacturer's seals and labels, intact.
- .2 Protect from freezing, moisture, water and contact with ground or floor.

1.5 ENVIRONMENTAL AND SAFETY REQUIREMENTS

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labeling and provision of material safety data sheets acceptable to local Labour regulations.
- .2 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Place materials defined as hazardous or toxic waste in designated containers.
- .2 Ensure emptied containers are sealed and stored safely for disposal away from children.
- .3 Dispose of surplus chemical and finishing materials in accordance with federal regulations.
- .4 Fold up metal banding, flatten, and place in designated area for recycling.
- .5 Use trigger operated spray nozzles for water hoses.
- .6 Return solvent and oil soaked rags for contaminant recovery and laundering or for proper disposal.
- .7 Use least toxic sealants, adhesives, sealers, and finishes necessary to comply with requirements of this section.
- .8 Close and seal tightly all partly used sealant containers and store protected in well ventilated fire-safe area at moderate temperature.
- .9 Place used hazardous sealant tubes and other containers in areas designated for hazardous materials.

PART 2 - PRODUCTS

2.1 SEALANT MATERIALS

- .1 Sealants and caulking compounds must:
 - .1 meet or exceed all applicable governmental and industrial safety and performance standards.
 - .2 be manufactured and transported in such a manner that all steps of process, including disposal of waste products arising therefrom, will meet requirements of all applicable governmental acts, by laws and regulations.
- .2 Sealant and caulking compounds must be accompanied by detailed instructions for proper application so as to minimize health concerns and maximize performance, and information describing proper disposal methods.
- .3 Caulking that emits strong odours, contains toxic chemicals or is not certified as mould resistant to not be used in or near air handling units.

2.2 SEALANT MATERIAL DESIGNATIONS

- .1 Acceptable single component neutral cure silicone sealants for skylight related work include:
 - .1 CWS by Dow Corning; or

- .2 795 by Dow Corning
- .2 Acceptable single component, moisture curing, polyurethane sealants for reglets and other roofing related flashing termination work include:
 - .1 Dymonic by Tremco.
- .3 Butyl (for concealed skylight related sealant joints): Tremco Curtainwall Sealant or approved alternate.
- .4 Primers:
 - .1 Primers to be as recommended by sealant manufacturer.
- .5 Cleaners:
 - .1 Acceptable cleaners:
 - .1 Dow Corning Primer/Surface Prep Solvent,
 - .2 Methyleneethylketone (MEK)
 - .3 Isopropyl Alcohol
 - .2 Surfaces to receive silicone sealants to not be cleaned with Xylol.
 - .3 All substrate materials to be cleaned with compatible cleaners.
- .6 Preformed Compressible and Non-Compressible back-up materials.
 - .1 Polyethylene:
 - .1 Extruded closed cell foam backer rod.
 - .2 Size: oversize 30 to 50 %.
 - .2 Bond Breaker Tape.
 - .1 Polyethylene bond breaker tape.
- .7 Compatibility: All materials in a sealant system to be compatible with each other, with substrate and any coating or waterproofing to be installed. sealants used with elastomeric coating or waterproofing systems must be approved by coating or waterproofing manufacturer.

2.3 JOINT PRIMER

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

PART 3 - EXECUTION

3.1 PROTECTION

- .1 Protect existing facades from staining or contamination.
- .2 Protect public from falling debris during installation.

- .3 At end of each day's work or when stoppage occurs due to inclement weather, provide protection for completed work and materials out of storage. At no time shall unsealed joints be left open. If protection is required, then entire drop/bay to be adequately protected.

3.2 EXAMINATION

- .1 Before commencing Work, verify that joint configuration and surfaces have been provided as specified under Work of other Sections to meet intent of sealant Specification, that joint conditions will not adversely affect execution, performance or quality of completed Work and that they can be put into acceptable condition by means of preparation specified in this Section. Verify Site conditions together with manufacturer's representative of sealant to be applied.
- .2 Examine existing conditions and substrates upon which work of this section is dependent. Report to Consultant in writing any defects or discrepancies. Commencement of work implies acceptance of existing conditions and assuming full responsibility for finished condition of work.
- .3 Ascertain that sealers applied to sealant substrates are compatible with sealant used and that full bond between sealant and substrate is attained. Request samples of sealed or coated substrate from their fabricators for testing of compatibility and bond if necessary.
- .4 Examine sealant configuration for width and depth. Depth of joint should be 1/2 joint width with a minimum depth of 6mm (0.25") and a maximum depth of 13mm (0.5") unless specified otherwise. For fillet joints, a minimum of 6mm (0.25") adhesion between sealant and substrate must be achieved on both sides of joint unless specified otherwise.
- .5 Defective work resulting from application to unsatisfactory joint conditions will be considered responsibility of those performing work of this section.

3.3 SURFACE PREPARATION

- .1 Prepare surfaces in accordance with manufacturer's directions.
- .2 Before any sealant repairs are made, type of existing sealant to be determined. If uncertain as to type, then a sealant manufacturer technical representative to be contacted to confirm type. Only sealant compatible with existing to be installed as part of repairs. Urethane based sealants are not to be applied over existing silicone sealants.
- .3 Where existing, remove sealant completely. In no case shall new sealant be applied over old. In addition:
 - .1 Remove existing sealants, dust, oil, grease, oxidation, mill scale, coatings and all other loose material by cutting, brushing, scrubbing, scraping and/or grinding. In no case, however, shall components be damaged during surface preparation.
 - .2 Clean substrates with recommended solvent cleaner. Apply solvent with a clean cloth, pad or soft paper towel. Applicator cloth or towel to not leave fiber residue on substrate surface. Surface should be wiped clean and dried with a second clean cloth to ensure removal of contaminants. If substrate surfaces is still not clean, repeat procedures as needed. Change cloths frequently to prevent depositing contaminants from cloth onto substrate surface.
 - .3 Use method of surface preparation suitable for substrate, as recommended by sealant manufacturer and that does not damage existing finishes.
- .4 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.

- .5 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.
- .6 Ensure joint surfaces are dry and frost free.
- .7 Remove loose particles present or resulting from routing by sweeping particles out with a dry brush, blowing out joints with oil free compressed air or by vacuuming joints prior to solvent cleaning.

3.4 PRIMING

- .1 Where necessary to prevent staining or for neat appearance, 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 Use only primer approved by sealant manufacturer for particular installation, applying in strict accordance with manufacturers printed recommendations.
- .4 Always pour primers onto rag or brush, do not dip rag or brush into container.
- .5 Prime only as much area that can be packed and caulked in a single day.
- .6 Do not apply excess primer, and apply primer only to areas which it will be contacted by sealant.

3.5 BACKUP MATERIAL

- .1 Apply bond breaker tape where installation of backer rod is not possible, three point adhesion needs to be eliminated or throat to width ratio needs to be created as per manufacturers recommendations.
- .2 When using backing material comprised of tubular or rod stock, avoid lengthwise stretching of material. Do not twist or braid backer material.
- .3 Provide a stiff blunt-surfaced wood or plastic installation tool, having shoulders designed to ride on finished surface and a protrusion of required dimensions to assure a uniform depth of backup material below sealant. Do not puncture exterior skin or surface of backer material. A screwdriver is prohibited for use on this project.
- .4 Using approved tool, smoothly and uniformly place backup material to depth indicated on drawings or otherwise required, compressing backer material 25% to 50% and securing a positive fit.
- .5 Install backing material to a depth to provide a caulked joint meeting depth requirement as set out in sealant manufacturer's specifications.

3.6 MIXING

- .1 Mix materials in strict accordance with sealant manufacturer's instructions.

3.7 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 exist to provide neat joint.
- .3 Apply sealant in continuous beads.
- .4 Apply sealant using gun with proper size nozzle.
- .5 Ensure that new sealant is adhered to substrates a minimum of 6 to 10 mm at each side of joint.
- .6 Use sufficient pressure to fill voids and joints solid.
- .7 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.
- .8 Tool exposed surfaces before skinning begins to give slightly concave shape. Tooling to be performed by proper metal or wood tool. Finger tooling joints will not be accepted.
- .9 Remove excess compound promptly as work progresses and upon completion.
- .2 Curing:
 - .1 Cure sealants in accordance with sealant manufacturer's instructions.
 - .2 Do not cover up sealants until proper curing has taken place.

3.8 CLEAN-UP

- .1 Clean adjacent surfaces immediately and leave work neat and clean.
- .2 Remove excess and droppings, using recommended cleaners as work progresses.
- .3 Remove masking tape after initial set of sealant.

END OF SECTION - 07 92 00

PART 1 - GENERAL

1.1 RELATED SECTIONS

- .1 Section 01 11 00 – Summary of Work
- .2 Section 07 62 00 – Sheet Metal Flashings and Trims
- .3 Section 07 92 00 – Joint Sealants
- .4 Section 08 80 00 - Glazing
- .5 General Requirements and provisions of the Contract

1.2 SUMMARY

- .1 Provide labour, materials and equipment necessary to complete work of this section. This is a performance specification and is issued in conjunction with the drawings which indicate the general arrangement of work, the dimensions, structural system, and the major elements of the construction. As performance documents, the drawings and specifications do not necessarily indicate or describe all items required for the full design, performance and completion of work of this section.
- .2 Section includes:
 - .1 Structural design, engineering and fabrication of complete Metal-Framed Skylight system, including aluminum framing, integral closures, trim, perimeter flashings and surface reglets as indicated on IRC drawings provided.
 - .2 Glass and glazing for metal-framed skylight system including gaskets, sealants, spacers, blocking and related materials.
 - .3 Fasteners, anchors and related reinforcement of framing system as required to resist design loads.

1.3 REFERENCES

- .1 Canadian Standards Association (CSA)
 - .1 CAN/CSA 3-S157.20-M83, Strength Design in Aluminum
- .2 British Columbia Energy Efficiency Act Information Circular (Windows, Glazing, Doors and Skylights)

1.4 SYSTEM DESCRIPTION

- .1 Performance Requirements: Provide metal-framed skylights which have been manufactured, fabricated and installed to withstand loading required by current BC Building Code. Provide performance criteria required by these specifications without defects, damage or failure.
- .2 Energy Efficiency Requirements: The system must meet the maximum heat transfer rate (U-Value) performance standard of 3.10 watts per square meter of product area per degree Kelvin.
- .3 The skylight system shall be designed in accordance with the following standards:
 - .1 BC Energy Efficiency Act Information Circular
 - .2 NAFS08

- .3 CSA A440.2-04, Energy Performance of Windows and Other Fenestration Systems
- .4 Skylight systems must have adequate resistance to pressure differentials.
- .5 Skylight systems must have adequate provision for thermal movement without thermal fractures of framing members, glazing and/or sealants.
- .6 Skylight systems must have adequate provision for live, dead, wind, snow and rain loads without failures, distortion or fracture.
- .7 Skylight systems must have adequate support and anchorage of components taking into consideration all loading factors and combination.
- .8 Skylight systems must have a water and weather-tight installation with gaskets, seals, and sealants to effectively prevent water entry into building.
- .9 Skylight system must conform with the "open rainscreen principle" (i.e., be pressure-equalized and self-drained to the exterior). Provide pressure equalized and self-drained vents at exterior frame members without causing air flow around glazing.
- .10 Skylight system must have continuous air and vapour seals to control transfer of moisture vapour into system of insulated glass units.

1.5 SUBMITTALS

- .1 Product Data: Submit product data, including manufacturer's product literature for specified system.
- .2 Samples: Submit selection and verification samples for finishes, colours and textures.
 - .1 Aluminum Finish: Submit 2 sets colour charts or range samples for initial color selection. Submit finished sample of color selected for use.
 - .2 Glazing Materials: Submit 2 pieces verification sample 12" square, of the specified glass, including any integral tints, coatings as specified.
 - .3 Submit standard sealant colours for selection and approval.
- .3 **Engineer-Stamped Shop drawings:** Submit shop drawings showing layout, profiles and product components, including anchorage, accessories, finish colours, patterns and textures. Submit shop drawings for review and approval by the Owner/Consultant prior to fabrication. Include detailed plans, elevations, details of framing members, glazing infill materials (if any), sealants, fasteners, anchors and thicknesses and types of formed flashing and closures and relationship with adjacent materials. Indicate maximum horizontal and vertical forces at rafter anchors.
 - .1 Do not proceed with the work until shop drawings are acceptable to the Owner.
- .4 Submit Letters of Assurance by a Professional Engineer registered with the Association of Professional Engineers and Geoscientists of BC.
- .5 Upon request, submit verification of Skylight System U-Value certified by a Professional Engineer registered with the Association of Professional Engineers and Geoscientists of BC.
- .6 Quality Assurance / Test Reports: Include manufacturer's air and water resistance test reports showing compliance with specified performance requirements.
 - .1 Certification for Structural Sealant: Submit written documentation from sealant manufacturer stating that the sealant selected has been tested for adhesion and

compatibility on representative samples of metal, glass and other glazing components, and that the sealant joint design and application procedures shown on the shop drawings are suitable for this project.

.7 Close Out Submittals:

- .1 Provide Operations and Maintenance Manual to be submitted to the Consultant with the following documents included:
- .2 Include the following information:
 - .1 Maintenance instruction for materials, finishes, operation and cleaning.
 - .2 Parts list indicating make, size, serial number, manufacturer, telephone number and address of the suppliers.
 - .3 Arrange with and demonstrate to the Consultant, cleaning, reglazing and general maintenance procedures.
- .3 Warranty: Submit warranty documents specified herein.

1.6 WARRANTY

- .1 Contractor's Obligation: The contractor must submit a signed written warranty to the Consultant for the installation of work specified in this Section covering for a period of Two (2) Years from date of the Certificate for Substantial Performance.
- .2 Contractor must submit ten (10) years Manufacturer's Material Warranty.
- .3 In addition to the above, provide a two (2) year written guarantee on the following:
- .4 Aluminum: Guarantee against the following:
 - .1 Excessive Non-Uniformity: Any non-uniform fading during guarantee period.
 - .2 Pitting or Corrosion: No pitting or other type of corrosion resulting from natural elements in local atmosphere.
- .5 Sealants: Guarantee shall state that installed sealants are guaranteed against:
 - .1 Adhesive, cohesive or shear failure of joints.
 - .2 Staining of surfaces adjacent to joints by sealant or primer by migration through building materials in contact with them.
 - .3 Chalking or visible colour change on surface of the cured sealant materials.
- .6 Glass: Guarantee to remove and replace at the Subcontractor's expense any and all glass lights that fail to meet the design and performance requirements. Insulated sealed double glazing units shall be guaranteed against obstruction of vision as a result of dust or film formation on the inner glass surfaces for a period of ten (10) years from the date of Substantial Performance. Any units failing to comply with this guarantee shall be replaced without cost to the Owner.
- .7 Defective work shall be removed and replaced with acceptable work at no cost to the Owner, and at such times as designated by the Owner.
- .8 The cost of all warranties shall be included in the Contract price.

1.7 QUALITY ASSURANCE

- .1 Skylight System Manufacturer shall have a minimum Ten (10) years experience in the fabrication and installation of custom architectural metal-framed skylights. Manufacturer shall be capable of providing structural calculations, applicable independent product test reports, installation instructions, review of the application methods, customer approval, and periodic field service representation during construction.
- .2 Skylight System Installer shall have a minimum Ten (10) years experience in glazing and installation of metal-framed skylights. Installer shall be experienced to perform work of this section and has specialized in the installation of work similar to that required for this project and who is acceptable to product manufacturer.
- .3 **The Contractor, in the presence of the Consultant and the Owner, will perform field water testing after installation of the skylight framing and glazing, but prior to the installation of the exterior beauty caps. The testing shall be deemed fail if any water enters into the building or past the drainage channels during or after the testing.**
- .4 Skylights failing to perform to the required test levels will be modified such that they pass and re-testing will be conducted by the Consultant at the Contractor's expense.
- .5 The inspection and testing service does not relieve the Contractor of his responsibility for quality control of production and for subsequent mistakes.
- .6 Skylight systems shall conform, meet or exceed the following ratings:
 - .1 Air Tightness:
 - .1 Fixed – 0.2 L/(s.m2) of crack length (as per Fixed Rating).
 - .2 Water Tightness:
 - .1 Skylight water tightness shall meet B5 rating with no water infiltration at 500 Pa when tested in accordance with CSA A440-00 and ASTM E1105.
 - .2 No water shall penetrate the assembly and cause wetting of the interior room surfaces.

1.8 FIELD TESTING

- .1 Water Test: Contractor to provide a price to arrange for a third party water infiltration testing for the new skylight systems. Testing will be coordinated and scheduled by the Contractor prior to submission of Substantial Completion invoice.
- .2 All testing will be conducted using the following procedures:
 - .1 ASTM Standard E1105-00, Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference.
- .3 In situ testing will be conducted on the sample installation for compliance with the following ratings:
 - .1 Air Tightness:
 - .1 Fixed – 0.2 L/(s.m2) of crack length (as per Fixed Rating).
 - .2 Water Tightness:

- .1 Skylight water tightness shall meet B5 rating with no water infiltration at 500 Pa when tested in accordance with CSA A440-00 and ASTM E1105.
- .2 No water shall penetrate the window assembly and cause wetting of the interior room surfaces.
- .4 Failure to perform to the required test levels will mean modification such that they pass and re-testing will be conducted by the Owner, at the Contractor's expense.
- .5 Contractor to arrange for sealant representative to be on site during installation of Mock-up. Sealant representative to return after curing period has elapsed and perform pull test, providing report to Owner, Consultant and Contractor.
- .6 The inspection and testing service does not relieve the Contractor of his responsibility for quality control of production and for subsequent mistakes.

1.9 PROJECT SITE CONDITIONS:

- .1 Field Measurements: Verify actual measurements / openings by taking field measurements before fabrication. Show recorded measurements on shop drawings. Coordinate field measurements and fabrication schedule with construction progress to avoid construction delays.
- .2 Field-verify existing dimensions against approved submittal drawings and advise Consultant of any deviations prior to commencing installation.

1.10 DELIVERY STORAGE AND HANDLING

- .1 Deliver materials with identification labels and in unopened, undamaged containers.
- .2 Store materials protected from exposure to harmful weather conditions, temperature, and humidity. Handle skylight material and components to avoid damage. Protect skylight material against damage from sunlight, weather, excessive temperatures, construction activities, and other hazards.

PART 2 - PRODUCTS

2.1 METAL-FRAMED SKYLIGHTS

- .1 Acceptable Manufacturers/Products: Spectrum (Pressure Plate Skylight Systems), Kawneer Canada (Kawneer 2000), or other approved equal. Contractor must submit a request for approval of equal system, complete with brochures and technical data, at least 7 days prior to RFQ closing.
- .2 New Skylight System is to be designed to suit the existing structural supports.

2.2 MATERIALS

- .1 All materials shall be compatible and by the same manufacturer.
- .2 Extrusions:
 - .1 Extrusions to be designed in accordance with CAN/CSA-S157.
 - .2 Extruded aluminum: Aluminum Association Alloy AA6063-T5 with minimum yield strength 110 MPa for thickness up to 12.7 mm.

- .3 Sheet Steel: Stainless steel or hot-dipped zinc coating at least equal to ASTM A525M coating designated Z275 and with sufficient ductility to permit necessary forming operation.
- .4 Exposed Aluminum Sheet and Plate: AA1100-H14, alloy and temper. Minimum thickness of flashings shall be 1.0 mm (0.040") for exposed flashings and 0.6mm (0.024") for interior or concealed flashings.
- .5 The main frame depth shall be not less than 62mm (2-1/2") complete with frame extension if necessary (confirm existing conditions).
- .3 Aluminum Finish:
 - .1 Clear Anodized Finish:
 - .1 Finish aluminum components in accordance with "Aluminum Association Designation System for Aluminum Finishes – AAC22A31
 - .2 Anodized to attain a Type II (Class 1 for exterior) and (Class 2 for interior) anodic coating; exterior coating not less than 0.7mil (18 microns); interior coating not less than 0.4 mil (10 microns).
 - .3 Coating mass when tested to ASTM B137; Class 2, density shall not be less than 24.0 g/m² except for interior trim which shall have a minimum coating area density of 12.0 g/m².
 - .4 Exposure to Salt Spray to ASTM B117: Class 2, capable of withstanding 250h of exposure without pitting; interior trim Class 3, minimum time exposure of 100h without pitting.
- .4 General Configuration:
 - .1 Skylight shall incorporate internal drainage systems.
 - .2 Glazing shall be fixed with external pressure plates at both the purlins and rafters.
 - .3 Purlins to incorporate a structural sealant joint with no exposed pressure plates.
 - .4 Rafter pressure plates shall be provided with a snap cap.
 - .5 Silicone sealant needle bead shall be installed at all of the up slope sides of the purlin pressure plates and extended a minimum of 150mm (6") up the adjacent rafters.
 - .6 Both purlins and rafters shall be provided with internal condensate gutters.
 - .7 All joints between purlins and rafters shall be fully sealed with butyl tape.
- .5 Glass: Sealed Insulating Glass Units, IGMAC certified to meet specified requirements of CAN/CGSB-12.8 with a dual perimeter edge seal, 13mm air space and glass which meets the specified requirements of CAN/CGSB-12.3. Spacer shall be stainless steel. Glass thickness to meet BC Building Code and CAN/CGSB-12.20 requirements but not less than 6 mm (1/4") thick for each lite. Glass and glazing materials to meet specified requirements of Section 08800
- .6 Sealants: Refer to Section 07920 Sealants
- .7 Isolating Coating: Alkali resistant bituminous enamel paint conforming to CGSB 1-GP-108M to prevent deterioration due to corrosion or electrolytic action, as recommended by manufacturer. Isolate aluminum from following components:

- .1 Dissimilar metals except stainless steel, zinc, or white bronze of small area.
- .2 Concrete, mortar and masonry.
- .3 Wood.
- .8 Perimeter Insulation: non-shrinking, low expansion (25%), closed cell, no CFC, single component polyurethane foam, complying with CAN/CGSB 51-GP-23M.
- .9 Fasteners: Screws, nuts, bolts, etc. to be of 300/400 series stainless steel where exposed to dampness and moisture. Cadmium plated steel may be used where fastenings are not exposed to dampness and moisture.
- .10 Thermal break: Continuous high density polyurethane. As recommended by the Skylight Manufacturer.
- .11 Glazing gaskets: as recommended by Skylight Manufacturer.
- .12 Exterior Sealants: As recommended by Skylight Manufacturer and conforms to applicable CGSB-19-GP Series.
- .13 Isolating Coating: Alkali resistant bituminous enamel paint conforming to CGSB 1-GP-108M to prevent deterioration due to corrosion or electrolytic action, as recommended by manufacturer. Isolate aluminum from following components:
 - .1 Dissimilar metals except stainless steel, zinc, or white bronze of small area.
 - .2 Concrete, mortar and masonry.
 - .3 Wood.
- .14 Perimeter Insulation: non-shrinking, low expansion (25%), closed cell, no CFC, single component polyurethane foam, complying with CAN/CGSB 51-GP-23M. Minimum R-5 per inch.

2.3 FABRICATION

- .1 Fabricate components per manufacturer's installation instructions and with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
- .2 Accurately fit and secure joints and corners. Make joints flush, hairline and weatherproof.
- .3 Dimensions shown on drawings are diagrammatic only. Field measurements of rough skylight opening shall be performed by contractor and shown on submitted shop drawings. Maintain sight lines indicated and clearances to other construction components.
- .4 Aluminum Flashings:
 - .1 Fabricate flashings and starter strips to dimensions and profiles indicated on reviewed shop drawings and to meet specified requirements. Determine dimensions from site measurements.
 - .2 Provide required joint covers and concealed anchoring devices. Do not use exposed fasteners or anchors except these indicated on reviewed shop drawings.
 - .3 Hem all exposed edges a minimum of 13 mm for appearance and stiffening.
- .5 Fastenings:

- .1 Where fastenings are exposed, use Series 300 stainless steel for steel-to-steel, aluminum for aluminum-to-aluminum.
- .2 Where fastenings are not exposed to dampness or moisture, cadmium plated steel may additionally be used for all combinations of metal noted in preceding subparagraphs.
- .3 Thermal Movement: Fabricate units and assemblies to provide for expansion and contraction of component members and between units when subjected to surface temperatures from -34°C to 82°C.
- .6 Anchors:
 - .1 Incorporate anchorage to structure as required by the reviewed Shop Drawings.
 - .2 Allow for complete adjustment in anchorage for levelling and positioning of units during installation.
 - .3 Place manufacturers and identification name plates in semi-concealed location

2.4 FINISHES

- .1 Submit colour samples for approval by the Owner prior to any fabrication start.

PART 3 - EXECUTION

3.1 INSTALLATION

- .1 Install Skylights plumb and level, and true to line, without warp or rack of frames with manufacturer's prescribed tolerances and installation instructions. Provide support and anchor in place.
- .2 Dissimilar Materials: Provide separation of aluminum materials from sources of corrosion action contact points.
- .3 Glazing: Glass shall be outside glazed and held in place with extruded aluminum pressure plates anchored to the rafters using stainless steel fasteners.
- .4 Water Drainage: Water shall be typically diverted to the rafters and exit to the exterior of the building through weeps in the baffle and gutter. Typical horizontal covers and pressure plates will not require weep holes.
- .5 Comply with manufacturer's product data, including product technical bulletins, product erection / installation instructions, and product carton instructions for installation.

3.2 FIELD QUALITY CONTROL

- .1 Mock-up test is required.
- .2 In-situ testing is not required, however, if testing is conducted by the Owner or an agency employed by the Owner, and the installed system fails to meet the specifications, the Contractor shall repair or replace the system and re-test the system at no cost to the Owner.
- .3 Verify that substrate conditions are acceptable for product installation in accordance with manufacturer's instructions.
- .4 Should testing is to be required, testing shall be performed per AAMA 503 by a qualified independent testing agency.

3.3 PROTECTION AND CLEANING

- .1 Protect installed product's finish surfaces from damage during construction. Protect aluminum skylight system from damage from grinding and polishing compounds, plaster, lime, acid, cement, or other harmful contaminants.
- .2 Cleaning: Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions prior to owner's acceptance. Remove construction debris from project site and legally dispose of debris.
- .3 Final cleaning of skylight installation shall be performed by the Contractor.

END OF SECTION - 08 63 00

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PART 1 - GENERAL

1.1 DESCRIPTION

- .1 Section 01 11 00 – Summary of Work
- .2 Section 07 92 00 – Sealants
- .3 Section 08 63 00 – Metal-Framed Skylights

1.2 APPLICABLE PUBLICATIONS

- .1 CAN/CGSB-12.1, Tempered or Laminated Safety Glass
- .2 CAN/CGSB-12.3, Flat, Clear Float Glass
- .3 CAN/CGSB-12.8, Insulating Glass Units
- .4 CAN/CGSB-12.9, Spandrel Glass
- .5 CAN/CGSB-12.10, Glass, Light and Heat Reflecting
- .6 CAN/CGSB-12.20, Structural Design of Glass for Buildings
- .7 CAN/CGSB-19-GP-14M, Sealing Compound, One Component, Butyl-Polyisobutylene Polymer Base, Solvent Curing
- .8 British Columbia Building Code Latest Edition
- .9 National Building Code of Canada

1.3 SUBMITTALS

- .1 Submit to the Owner and Consultant:
 - .1 Submit two (2) sets of glass material / coating samples to the Owner/Consultant for approval.
 - .2 Submit two (2) sets of glazing details and technical data including written installation recommendations from the manufacturer for each product which will be used in this section.
- .2 Provide to the Consultant, written confirmation from the manufacturer as to the compatibility of all materials to be used.
- .3 Insulated Glass Units (IGUs) must bear the IGMAC stamp. IGUs without a stamp will be rejected and will require replacement at no additional cost to the Owner or Consultant.

1.4 JOB CONDITIONS

- .1 Before commencing work each day, ensure that all surfaces to receive glazing tapes, sealants or primers are clean and dry.
- .2 Apply glazing tapes and sealants at air and substrate temperatures not less than the minimum recommended by the material manufacturer. Work shall not be carried out during inclement weather conditions.
- .3 Proceed with glazing only when glazing surfaces are accumulating no moisture from rain, mist or condensation.

- .4 Obtain approval from the manufacturer, when temperature of glazing surfaces is below 4°C, for the glazing methods and protective measures which will be used during glazing operations.

1.5 WARRANTY

- .1 Provide a warranty stating that the installation of new sealed insulating glass units specified in this Section shall not cause any deleterious affect on the air and water tightness and wind load resistance performance of the skylight system, remain watertight and free of defects which shall include without being limited to breakage and loss of seal. Fogging of glass inside sealed units or failure of a field dew point test will be considered sufficient evidence of loss of seal. This warranty shall be for a period of ten (10) years from date of Substantial Performance. The warranty shall include all required materials and their installation, at no additional cost to the Owner.
- .2 Repair leaks into building within 24 hours of notification. Any repairs required shall be carried out in accordance with the recommendations of the Consultant.
- .3 Inspect glazing 30 days before expiry of warranty period and correct defects within 15 days of inspection.
- .4 The cost of all warranties shall be included in the Contract price.

PART 2 - PRODUCTS

2.1 SKYLIGHT GLASS

- .1 Sealed Insulating Glass Units: IGMAC certified to meet specified requirements of CAN/CGSB-12.8 with a dual perimeter edge seal, 13 mm air space and glass which meets the specified requirements of CAN/CGSB-12.3.
- .2 New Skylight system shall have:
 - .1 Double-glazed 1" (25mm) thick sealed units with
 - .2 ¼" (6mm) min. heat tempered outer lite, Solargray tint
 - .3 ¼" (6mm) min. laminated glass, 0.30 PVB Interlayer
 - .4 LowE Solarban 60 (or equal) on Surface #2 or #3
 - .5 Glass separated by ½" (13mm) argon-filled airspace
 - .6 Warm-edge spacers ; desiccant-filled SS or approved equal
- .3 The perimeter edge seal is to consist of a continuous polyisobutylene primary seal and a continuous silicone secondary seal in full contact with the primary seal. Edge delete film as required by glass and edge seal manufacturer
- .4 The edges of all glass shall be free from spalls, flake chips or rough edges which would be either visible or compromise the adhesion of the exterior weather seal.

2.2 GLAZING ACCESSORIES

- .1 Ensure that glazing tapes, sealants, splines, and setting blocks are completely compatible with insulating glass unit sealants.
- .2 Setting Blocks: Neoprene, EPDM or Silicone with Durometer hardness of Shore "A" 80 to 90. Thickness to be 6 mm. Width of setting blocks to slightly exceed width of sealed insulating glass unit. Length of setting blocks to be 25 mm for every 1 square metre of glass with a minimum length of 50 mm. Setting blocks shall be compatible with all adjacent components, including edge

- seal and must not inhibit water by blocking weep holes. Wood spacers, shims or setting blocks are not acceptable.
- .3 Silicone Glazing Sealant: to comply with CAN/CGSB 19.18-M80-Type 2.
 - .4 Preshimmed Glazing Tape: preshimmed glazing tape such as POLYshim II Tape as manufactured by Tremco Ltd., or approved equivalent.
 - .5 Exterior Glazing Material: Tremco VisionStrip co-extruded EPDM gasket with butyl glazing tape.
 - .6 Glazing Spline: neoprene, silicone or polyvinyl chloride standard glazing spline to suit glass stops, Polyshim II glazing Spline, as manufactured by Tremco, or an approved equivalent.
 - .7 Glazing Gaskets: extruded neoprene, or EPDM conforming to CAN/CGSB 41-GP-20M
 - .8 Cleaning Material: MEK, Xylol, Toluol, or as recommended by glazing and sealant manufacturer.
 - .9 Primers: to glass and sealant manufacturer's recommendation.

2.3 FABRICATION

- .1 Fabricate glass to fit openings and to allow clearances, which will ensure that glass, is held firmly in place while providing clearances for thermal expansion and contraction, but not less than 3mm on each side.
- .2 Replace oversize or flared lights with entirely new units of proper dimensions.
- .3 Label each piece of glass to indicate manufacturer, type, and quality. Remove labels on glass units at time of installation.

PART 3 - EXECUTION

3.1 PREPARATION

- .1 Check new skylight IGU opening dimensions prior to fabricating glass units.
- .2 Commencement of work implies acceptance of existing conditions and assuming full responsibility for the finished condition of the work.
- .3 Protect existing roof surface along skylight during performance of repairs. Work shall not be conducted without suitable protection consisting of insulation and plywood/ sheathing type substrate.
- .4 Apply glazing tapes and sealants at air and substrate temperatures not less than the minimum recommended by the material manufacturer. Work shall not be carried out during inclement weather conditions.
- .5 Clean glazing rebate surfaces of all traces of sealant, dirt, dust, or other contaminants.
- .6 Ensure that projections have been removed from the glazing surfaces and that sufficient width and depth clearances are provided for the glass units.
- .7 Prime all surfaces to receive glazing tapes or sealants per sealant manufacturer's recommendations to provide a positive and permanent adhesion and to prevent staining. Apply primers per manufacturer's directions and test substrates for adhesion. Primer shall be suitable for materials affected.
- .8 Do not cut or nip tempered glass to fit. Replace oversize or flared lights with new units of correct dimensions. Do not cut or abrade tempered, heat strengthened or coated glass.

3.2 INSTALLATION

- .1 Position and glaze sealed insulating glass units into the framing, in accordance with IGMAC glazing recommendations and as indicated on the reviewed Shop Drawings. Centre the sealed insulating glass units in openings.
- .2 When requested by the owner or consultant, arrange for the presence of a technical representative of the glazing materials manufacturer to advise on procedures and methods when glazing commences.
- .3 Support the bottom of the sealed insulating glass units on setting blocks placed at quarter points of each lite (1/4 of the unit width from each corner) but not closer than 150 mm (6") from the corners of the units.
- .4 Set shims when required to allow a space of no less than 6 mm (1/4") between shim edges and sight lines. Spacer shims are not required where glazing tape is used.
- .5 Provide edge clearance of 3 mm (1/8") or to manufacturer's recommendation.
- .6 Cut tape or gasket to full length of opening. Ensure glazing material is fully sealed at corners. Glazing tape: Butt tape tightly at corners and knead all joints to form one continuous strip. Dap with compatible sealant. Glazing Gasket: Butt tightly at corners and seal with compatible sealant. Do not overlap gaskets or tape at corners.
- .7 Apply sealants with backing where indicated on reviewed shop drawings as specified in Section 07 92 00 – Joint Sealing. Use glazing sealants without addition of thinners from new and unopened containers clearly marked with the product name, batch number, and product manufacturer. Tool newly applied sealants with a slight bevel away from the glass surface.
- .8 Ensure that glazing sealants, gaskets, tapes, and splines are in full contact with glazing surfaces.
- .9 Install glass, ensure compression to glazing tape is achieved.
- .10 Remove protective coating from new glazing.

3.3 CLEANING

- .1 Remove as work progresses all corrosive and foreign materials which may set or become difficult to remove at time of final cleaning or which may damage components of the window system. Examine all surfaces as often as required to ensure cleanliness.
- .2 Clean and polish interior and exterior surfaces of glass after installation to the satisfaction of the Consultant and Owner, with a commercial glass cleaner or water and household hand dishwashing detergent solution.
- .3 Remove excess sealants, stains, deposits, marks or blemishes from work of this section and all adjacent surfaces, by methods not harmful to the surfaces. Replace or make good all defective, scratched or damaged materials.
- .4 Remove labels and perform final cleaning after completion of entire installation and immediately prior to Date of Substantial Performance.
- .5 Collect broken glass and cuttings in boxes and remove from site.

END OF SECTION - 08 80 00

**SCHEDULE B - APPENDIX 2-A
CONTRACT DRAWINGS**

DRAWING NUMBER	DRAWING INDEX/TITLE	DATE OF ISSUE
Consultant: IRC Building Sciences Group		
R1	Roof Plan	June 13, 2016
VCMM780	Skylight Detail	-
VCMM7181	Prefabricated Curb Detail	-
VCMM782	Prefabricated Curb Detail	-
VEMM032	Sleeper Detail	-
VDMM314	Drain Detail	-
VPMM949	Parapet Detail	-
VGMM954	Parapet Detail	-
VRMM606	Cladding Wall Detail	-
VRMM607	Cladding Wall Detail	-
VSMM608	Wall Detail	-
VSMM628	Gas Retro Box Detail	-
VSMM629	Conduit Detail: Electric Roof Flashing	-
VSMM635	Plumbing Stack Detail	-
VSMM641	Pipe Flashing Detail	-
VVMN050	Gasline / Conduit Support	-

M:\PROJECTS\18001-18250\18225_BRIDGEVIEW COMMUNITY CENTRE\18225-061SP_REPLACEMENT RA 1.1, 2.1\04_CAD\02_WORKING\BRIDGEVIEW COMMUNITY CENTER SPEC.DWG

EXISTING ROOF CONDITION (S) :

ROOFS 1.1 & 2.1

PLYWOOD DECK

2 PLY MOD. BIT. MEMBRANE

NEW ROOF CONDITION (S) :

ROOFS 1.1 & 2.1

EXISTING PLYWOOD DECK

EXISTING 2 PLY MOD. BIT. MEMBRANE

NEW MEMBRANE LAMINATED MINERAL FIBRE BOARD

NEW 1 PLY MOD. BIT. MEMBRANE

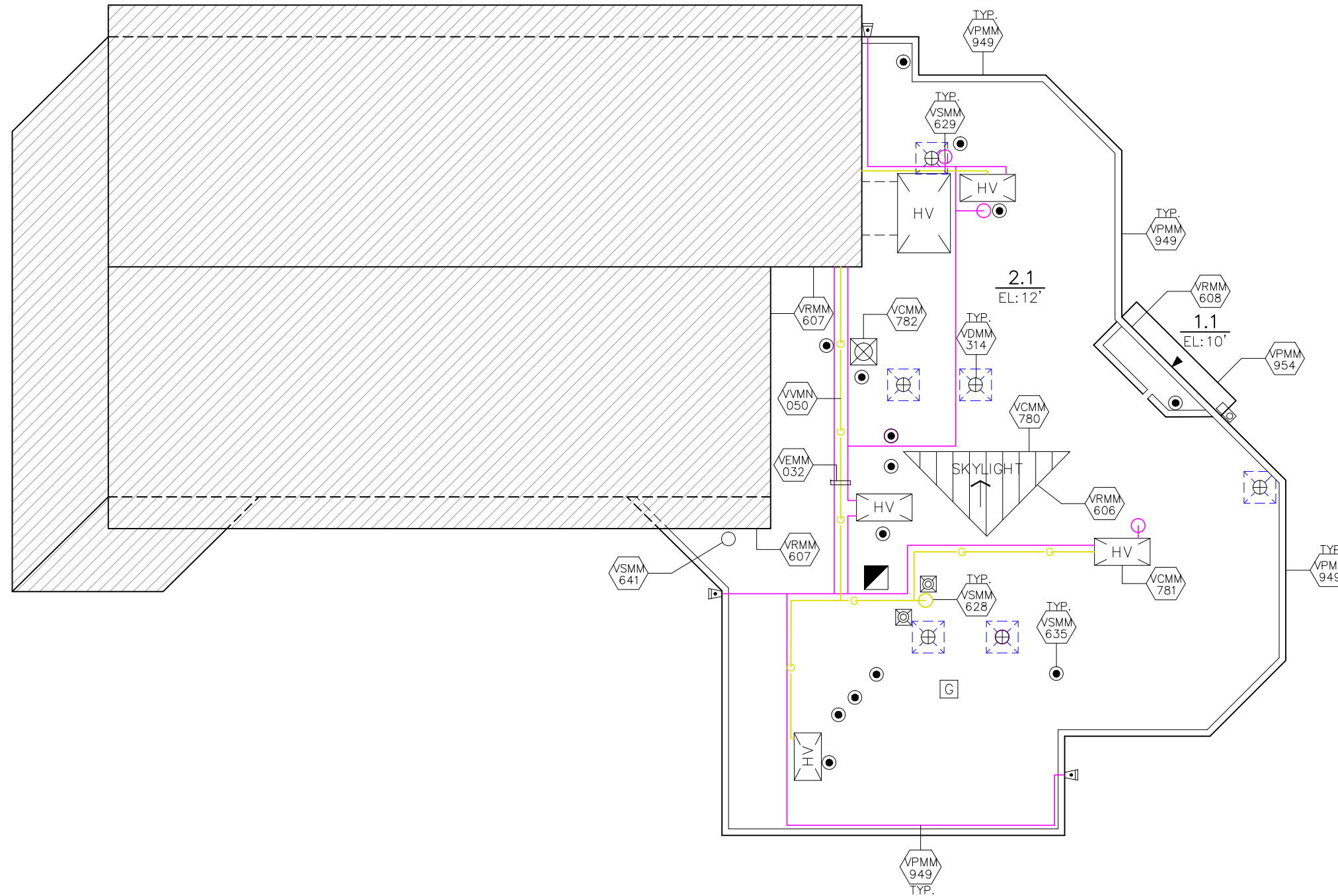
ROOF AREA (SQ. FT.)

1.1 - 47

2.1 - 5,032

TOTAL ROOF AREA (SQ. FT.)

5,079



LEGEND

ROOF AREAS NOT INCLUDED IN CONTRACT

ROOF PROJECTIONS:

	ANTENNA		HVAC UNIT ON SLEEPERS
	BREATHER		LADDER
	CAPPED OFF/ABANDONED STACK		LIGHT POST
	CHANGE IN ELEV.		PIPE SUPPORT
	CHIMNEY		PITCH POCKET
	CONDUIT LINE		PLUMBING OR SOIL STACK
	CONTROL JOINT		RA ROOF ANCHOR
	DRAIN		SATELLITE DISH
	EXHAUST FAN ON CURB		SCUPPER
	EXPANSION JOINT		SECURITY CAMERA
	EXPLOSION HATCH		SKYLIGHT
	FLAGPOLE		SLOPE
	GAS PIPELINE		SQUARE VENT
	GOOSENECK VENT		SQUARE VENT ON OVERSIZED CURB
	GOOSENECK VENT ON OVERSIZED CURB		TALLCONE OR "B" VENT
	HATCH		TALLCONE OR "B" VENT ON CURB
	HVAC UNIT		UNUSED OPENING
	HVAC UNIT ON CURB		WALKWAY PADS

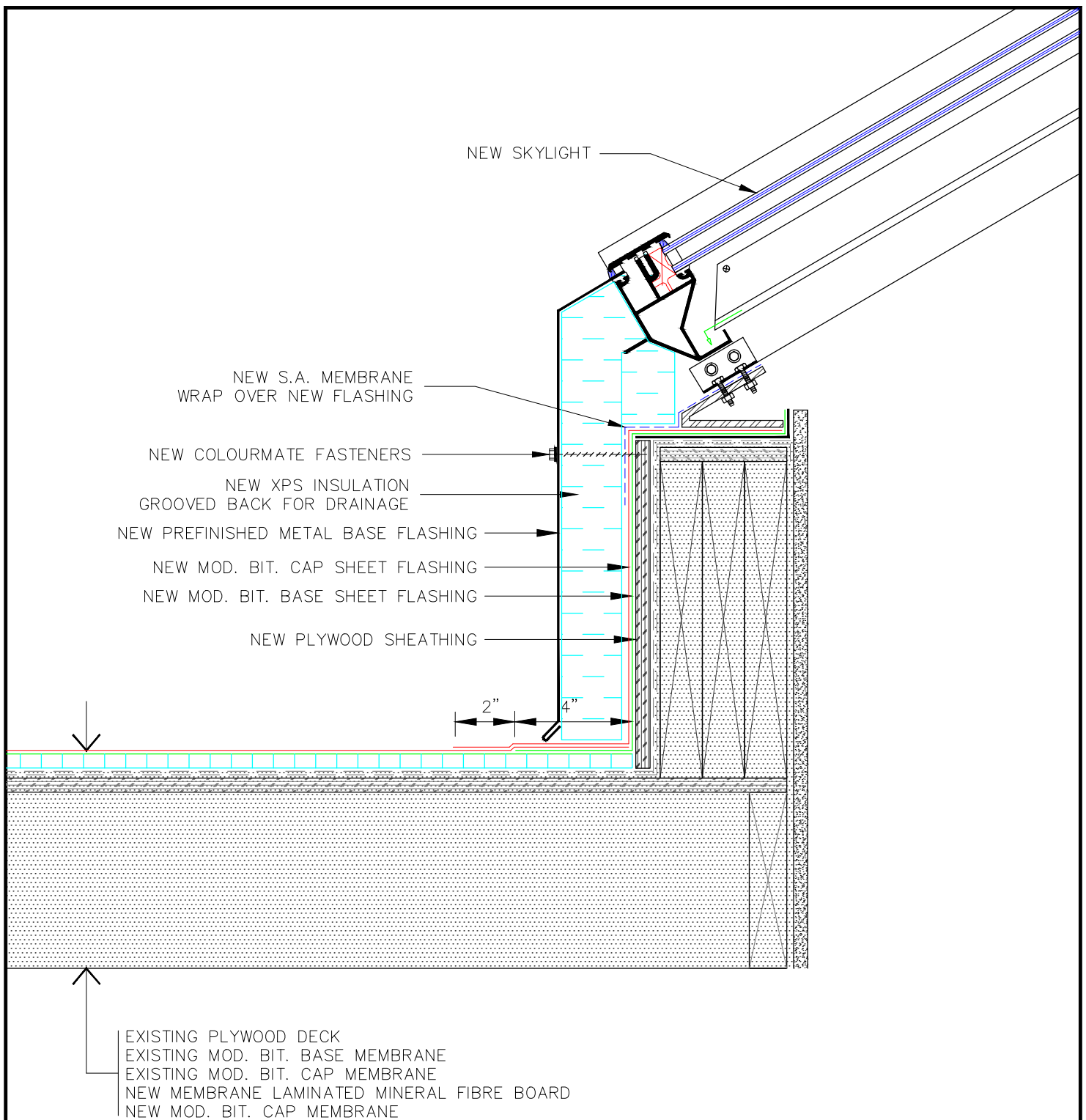
DRAINAGE:


	TAPERED INSULATION LAYOUT		NEW ROOF DRAIN TO BE INSTALLED
	DIRECTION OF WATER DRAINAGE		INSULATION SUMP
			INSULATION CRICKET

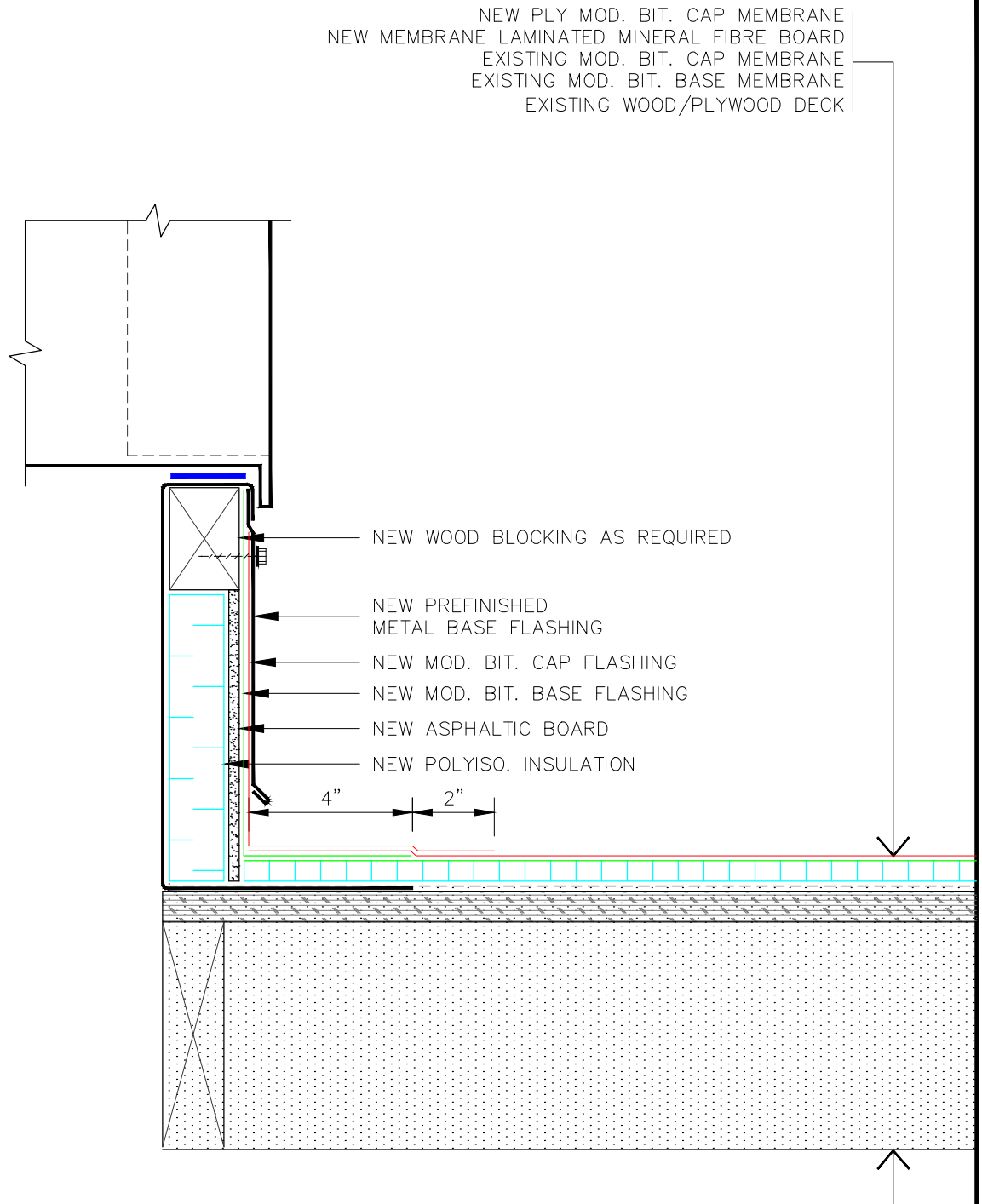
NOTE: CONTRACTOR RESPONSIBLE FOR VERIFICATION OF ALL DIMENSIONS AND MEASUREMENTS TO OWN SATISFACTION. © 2016 BY IRC GROUP INC.

irc IRC BUILDING SCIENCES GROUP
VANCOUVER • CALGARY • LONDON • MISSISSAUGA • OTTAWA • MONTRÉAL
TOLL FREE: 1-888-607-5245 TEL: 604-295-8070
WWW.IRCGROUP.COM FAX: 604-279-9644

TITLE:	ROOF PLAN	
CLIENT:	CITY OF SURREY	
PROJECT:	BRIDGEVIEW COMMUNITY CENTER 11475 - 126A STREET. SURREY, BC	
IRC #:	18225	
W.O.#:	VR16-061SP	
SCALE:	1/16"=1'-0"	
DATE:	JUNE 13/16	
DRN. BY:	R.M.	DWG.#:
CHK. BY:	T.A.A.	
		R1



	TITLE: SKYLIGHT DETAIL		REVISED:	SCALE: 4" = 1'-0"
			REV'N.#:	DATE:
	NOTE: NO REPRODUCTION OR USE OF THIS DRAWING IS AUTHORIZED WITHOUT EXPRESSED WRITTEN CONSENT		DRN. BY: B.W.	DWG.#: VCMM780
	© COPYRIGHT 2016 IRC BUILDING SCIENCES GROUP INC.		CHK. BY: T.A.A.	



TITLE: PREFABRICATED CURB DETAIL

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REVISED:

REV'N.#:

DRN. BY: R.M.

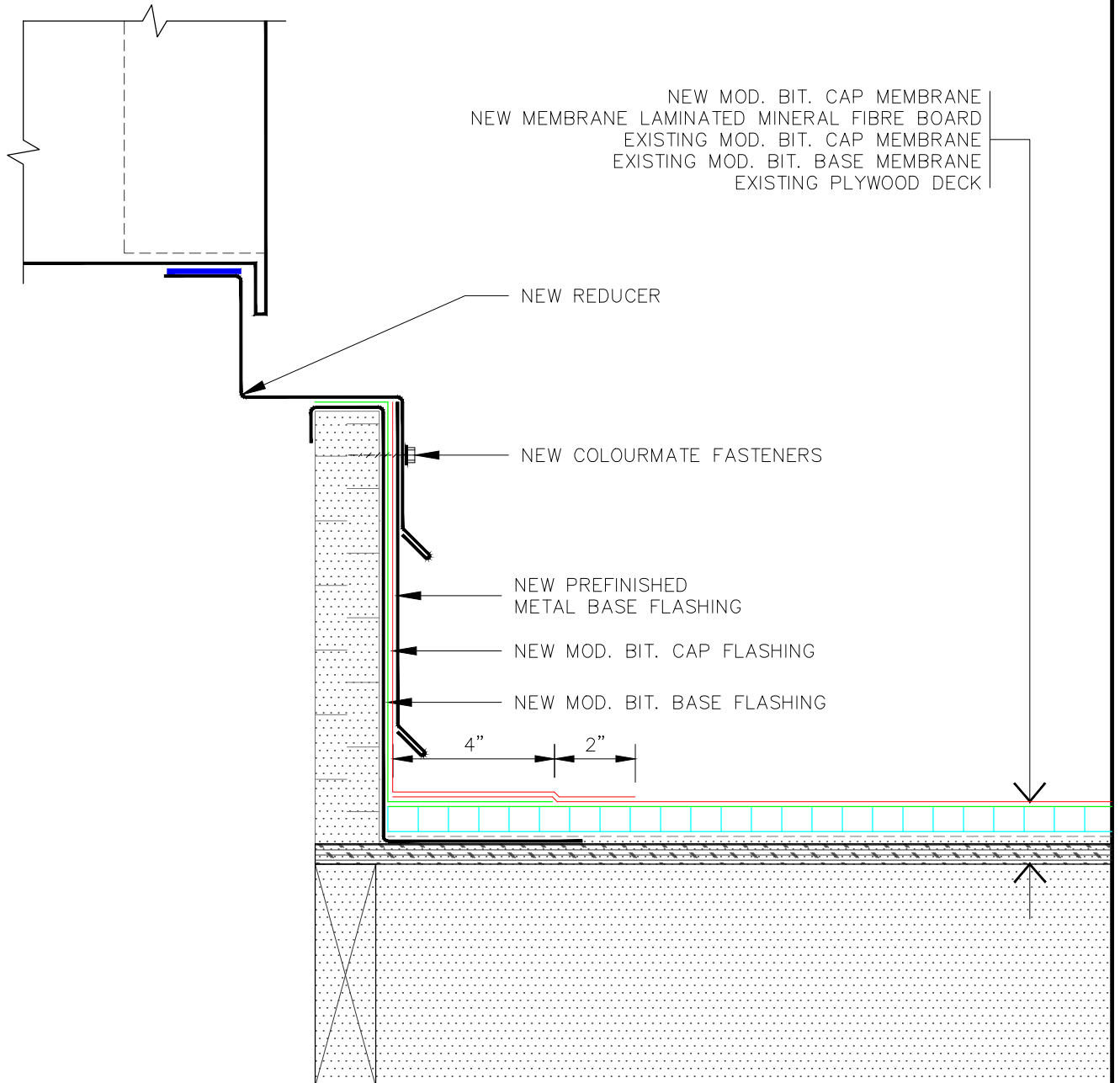
CHK. BY: T.A.A.

SCALE: 3" = 1'-0"

DATE:

DWG.#:

VCMM781



TITLE: PREFABRICATED CURB DETAIL

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REVISED:

REV'N.#:

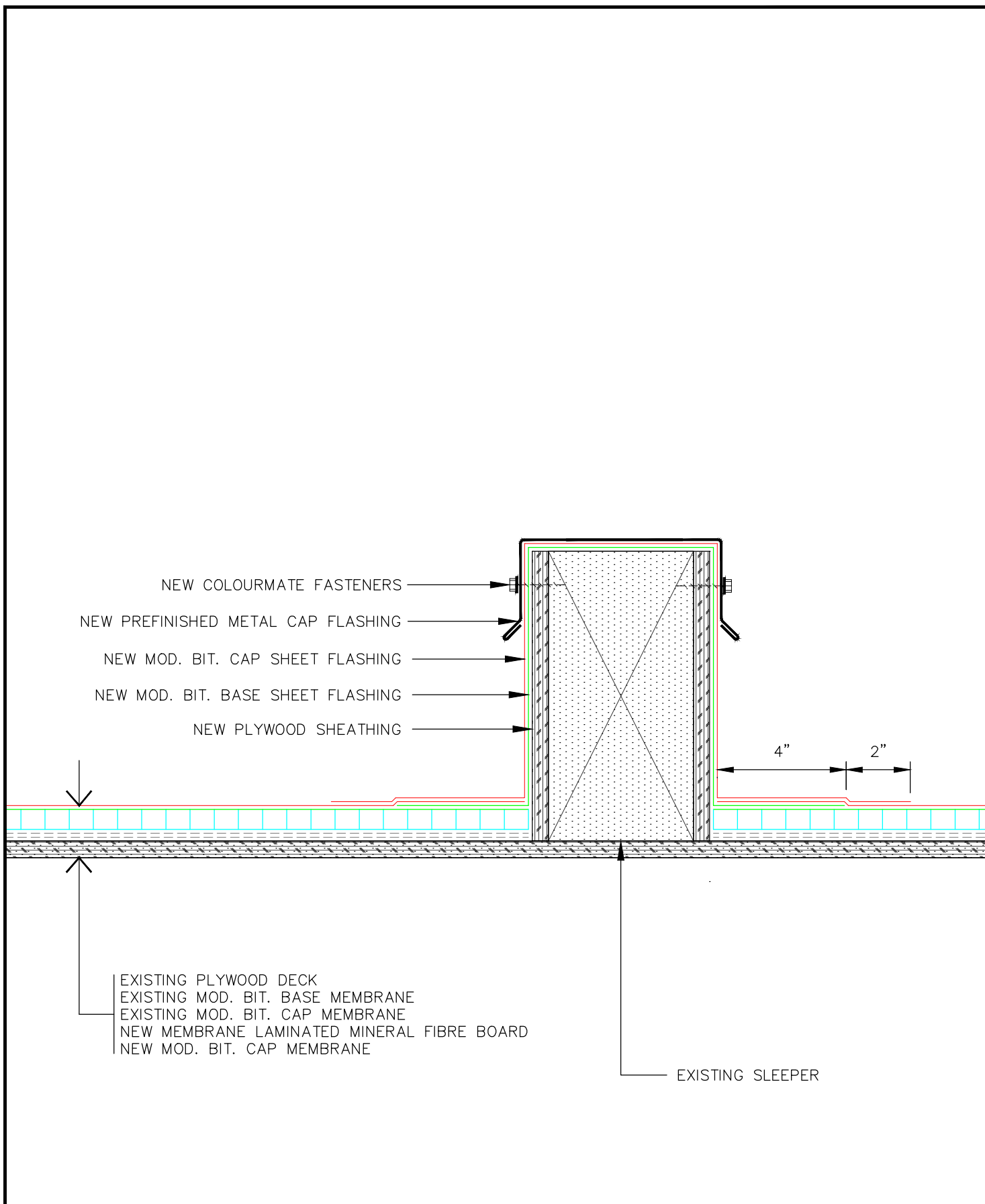
DRN. BY: R.M.

CHK. BY: T.A.A.

SCALE: 3" = 1'-0"

DATE:

DWG.#: VCMM782



TITLE:

SLEEPER DETAIL

REVISED:

REV'N.#:

SCALE: 4" = 1'-0"

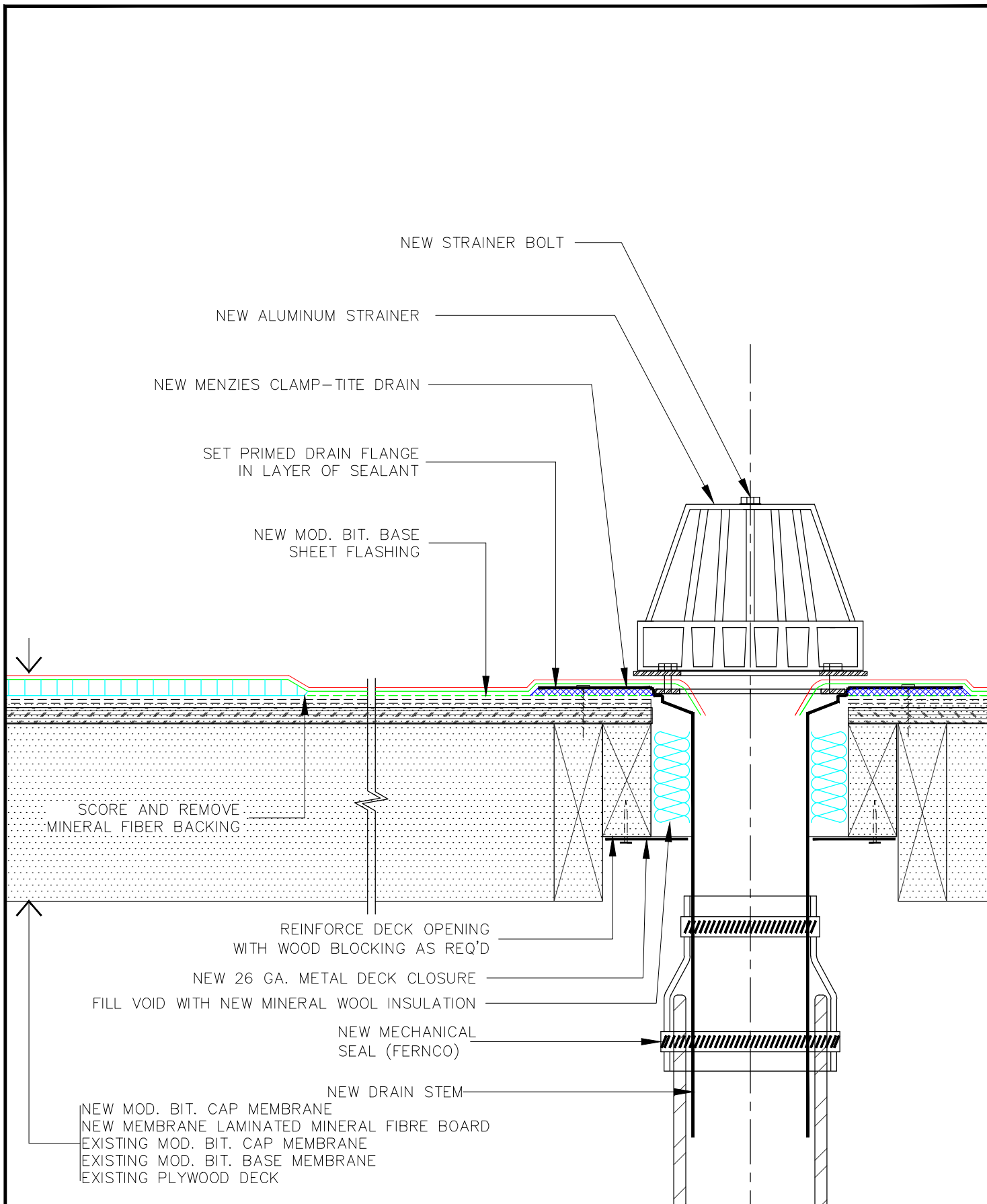
DATE:

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DRN. BY: R.M.

CHK. BY: T.A.A.

DWG.#: VEMM032



TITLE:

DRAIN DETAIL

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REVISED:

REV'N. #:

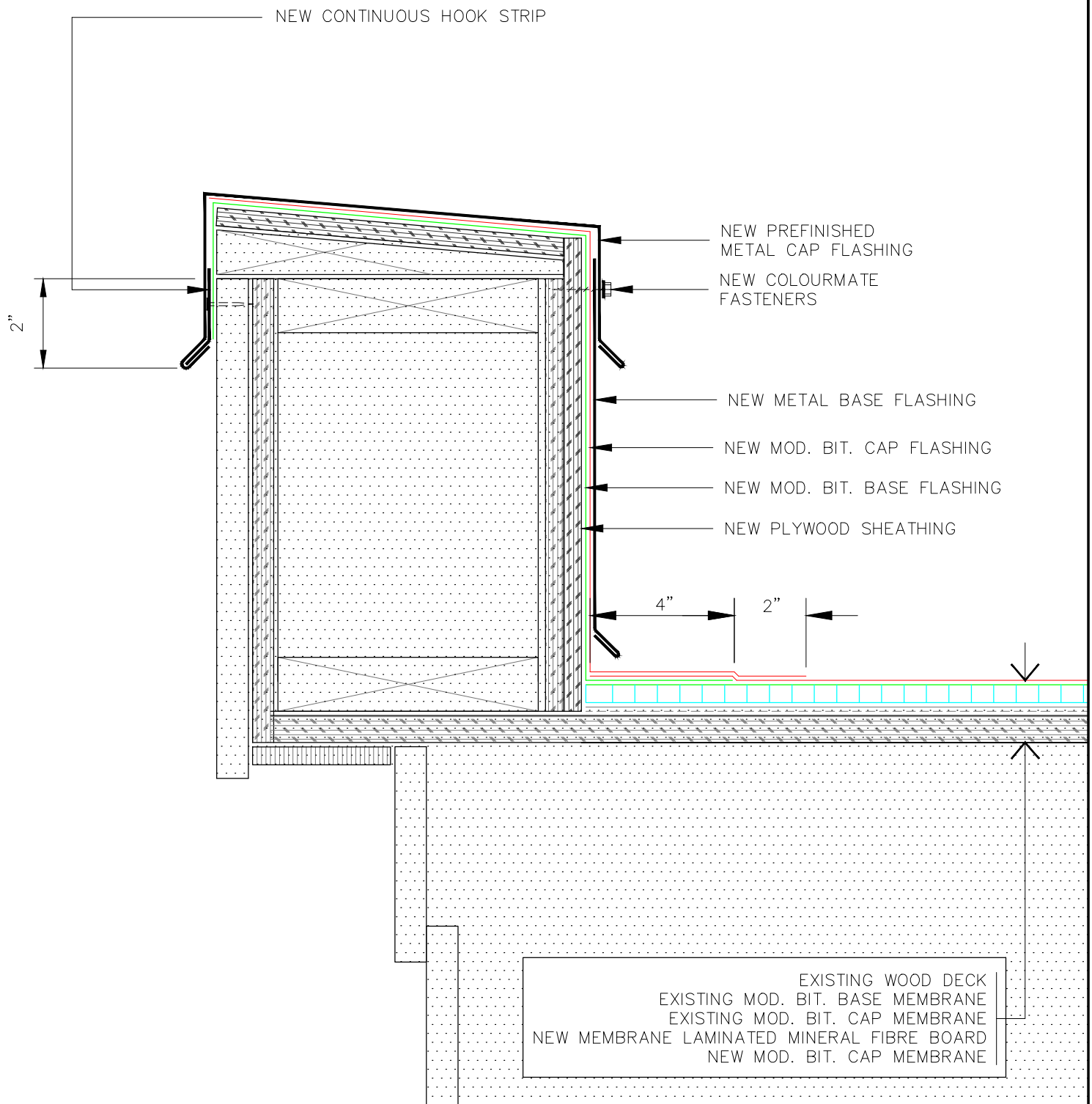
DRN. BY: R.M.

CHK. BY: T.A.A.

SCALE: 3" = 1'-0"

DATE:

DWG. #: VDMM314



TITLE: PARAPET DETAIL

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REVISED:

REV'N.#:

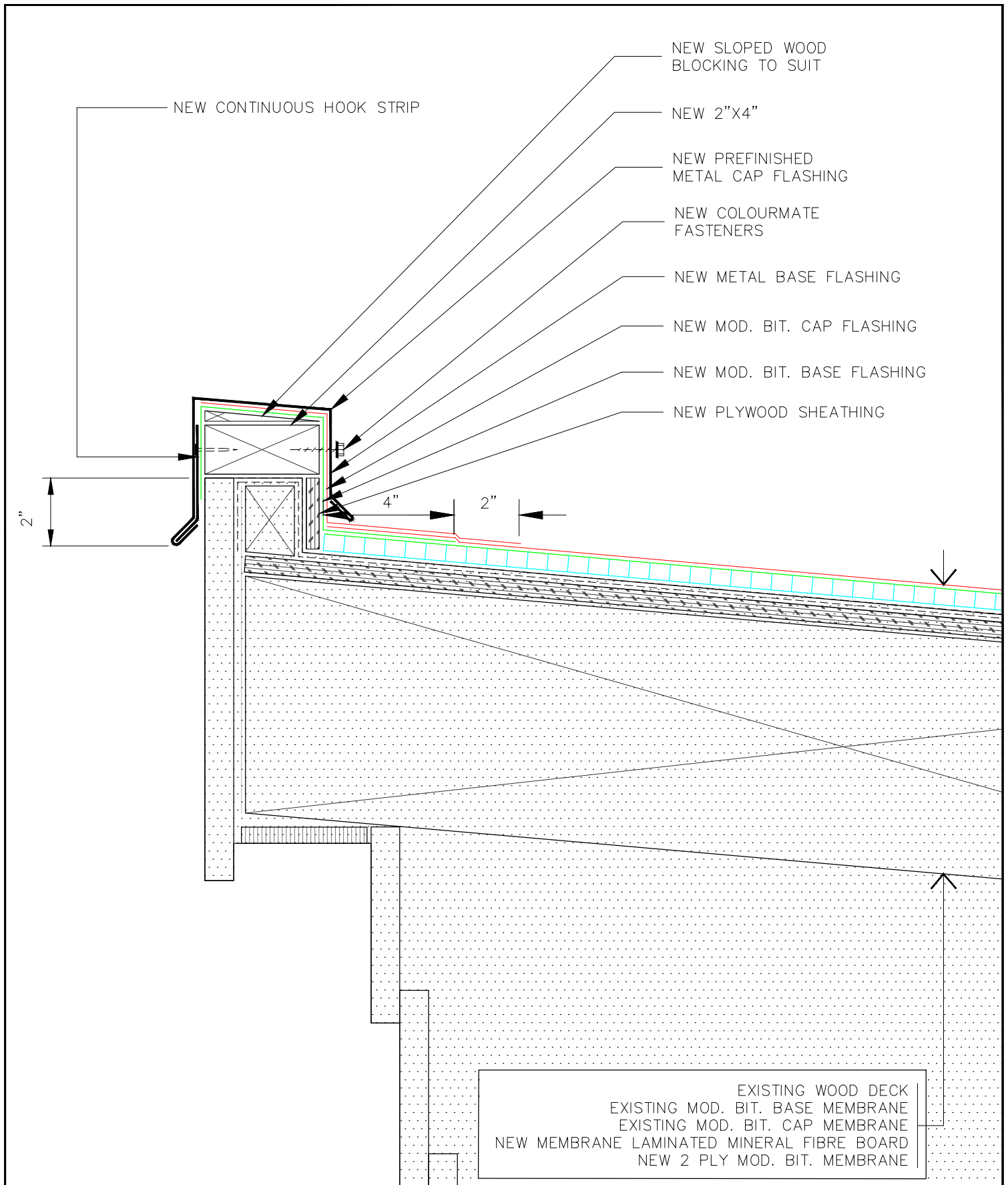
DRN. BY: R.M.

CHK. BY: T.A.A.

SCALE: 3" = 1'-0"

DATE:

DWG.#: VPMM949



TITLE:

PARAPET DETAIL

REVISED:

SCALE: 3" = 1'-0"

REV'N.#:

DATE:

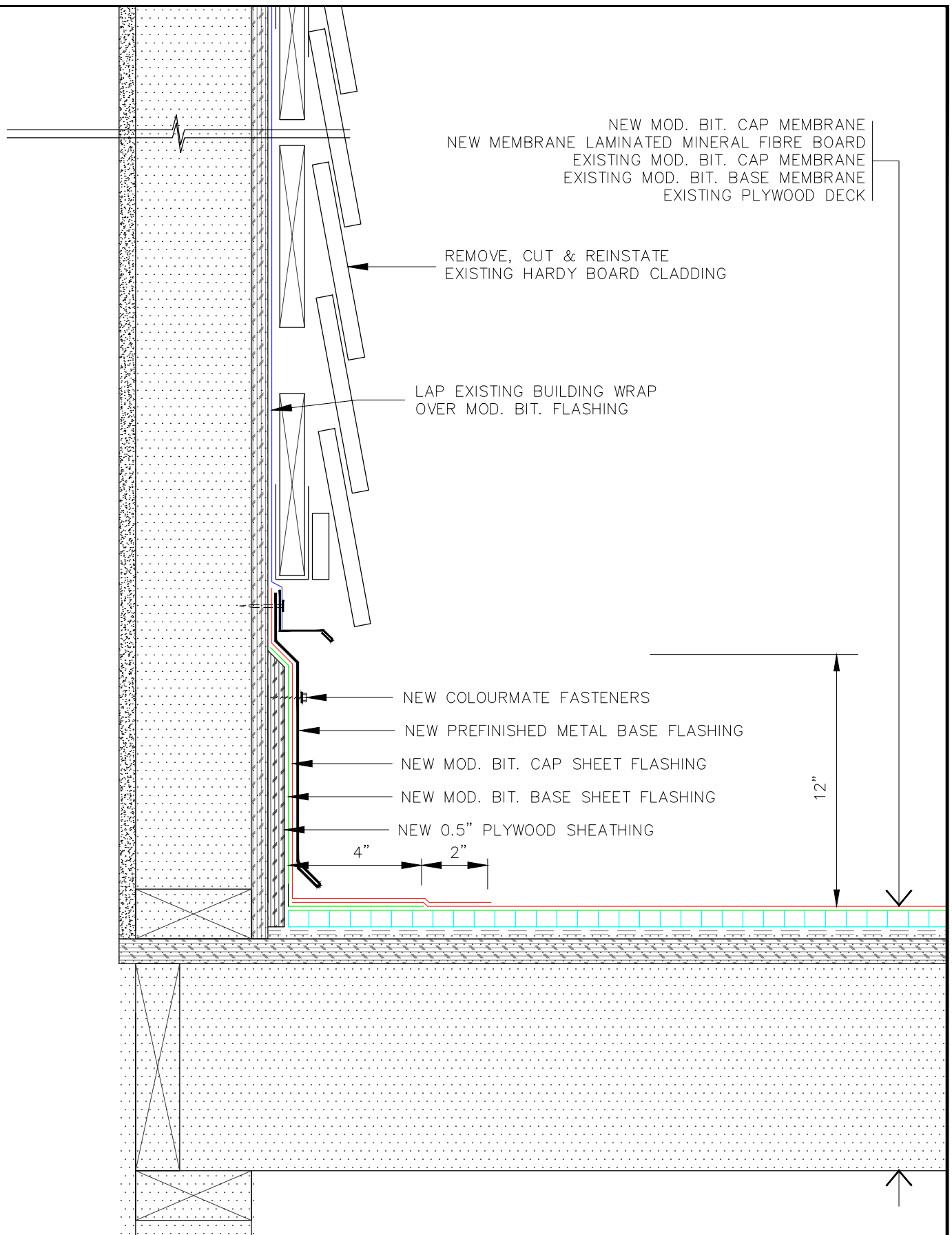
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DRN. BY: R.M.

DWG.#:

CHK. BY: T.A.A.

VPMM954



TITLE: CLADDING WALL DETAIL

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REVISED:

REV'N.#:

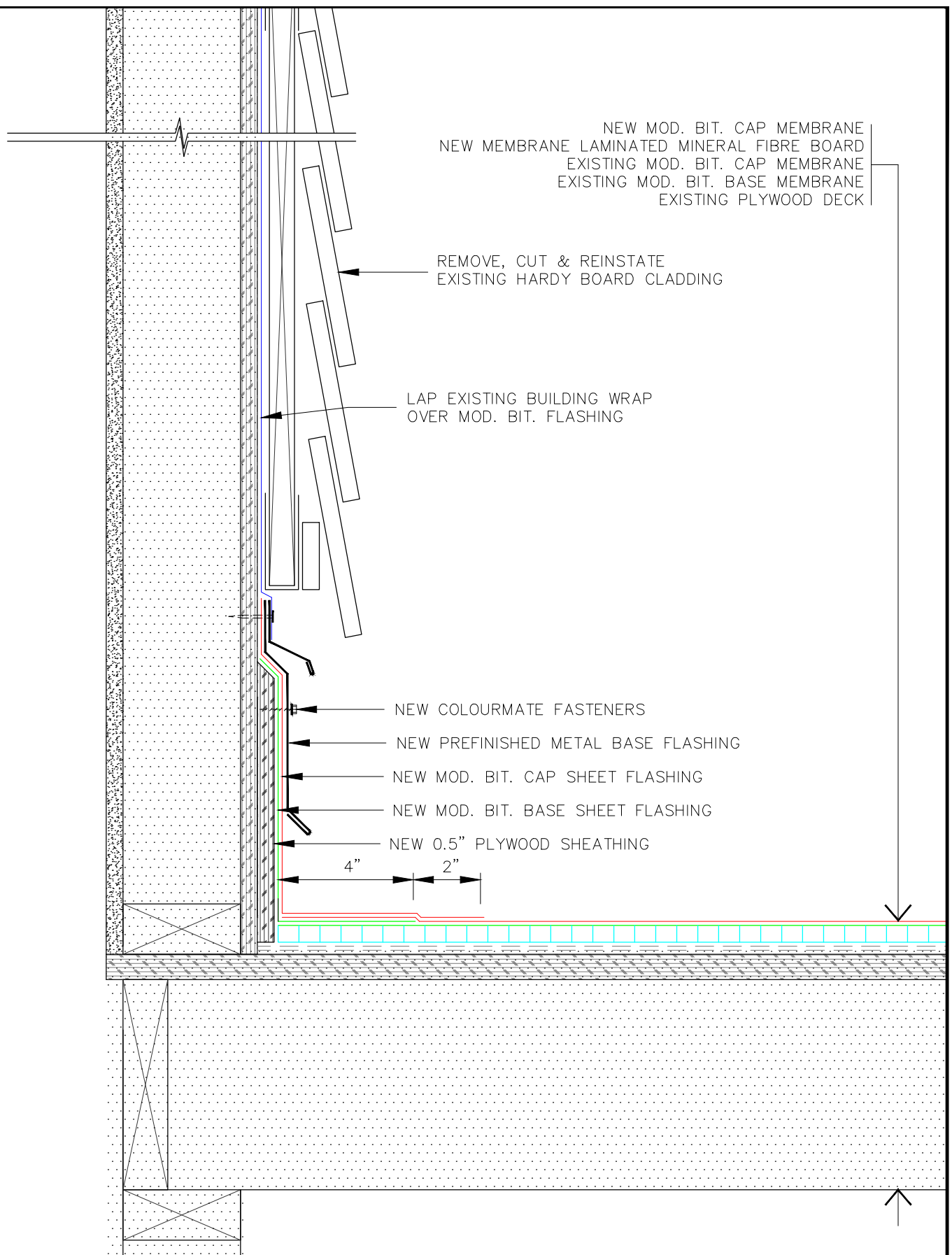
DRN. BY: R.M.

CHK. BY: T.A.A.

SCALE: 3" = 1'-0"

DATE:

DWG.#: VRMM606



TITLE: CLADDING WALL DETAIL

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REVISED:

REV'N.#:

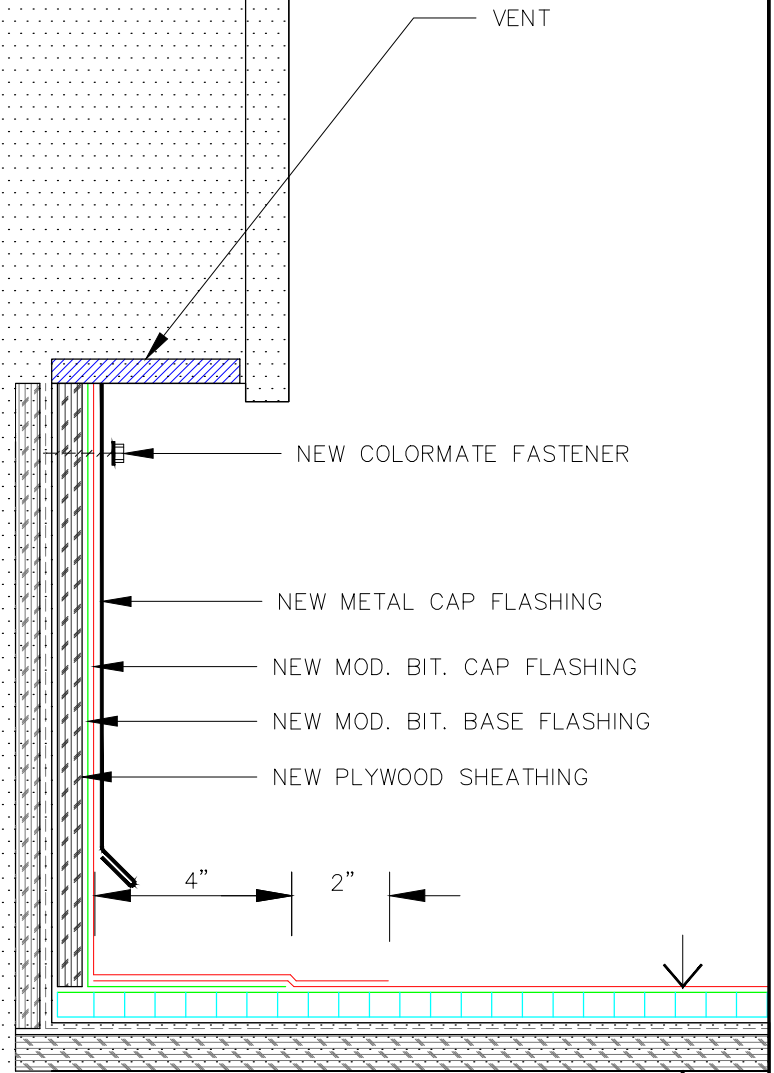
DRN. BY: R.M.

CHK. BY: T.A.A.

SCALE: 3" = 1'-0"

DATE:

DWG.#: VRMM607



EXISTING WOOD DECK
 EXISTING MOD. BIT. BASE MEMBRANE
 EXISTING MOD. BIT. CAP MEMBRANE
 NEW MEMBRANE LAMINATED MINERAL FIBRE BOARD
 NEW MOD. BIT. CAP MEMBRANE



TITLE:

WALL DETAIL

REVISED:

REV'N.#:

DRN. BY: R.M.

CHK. BY: T.A.A.

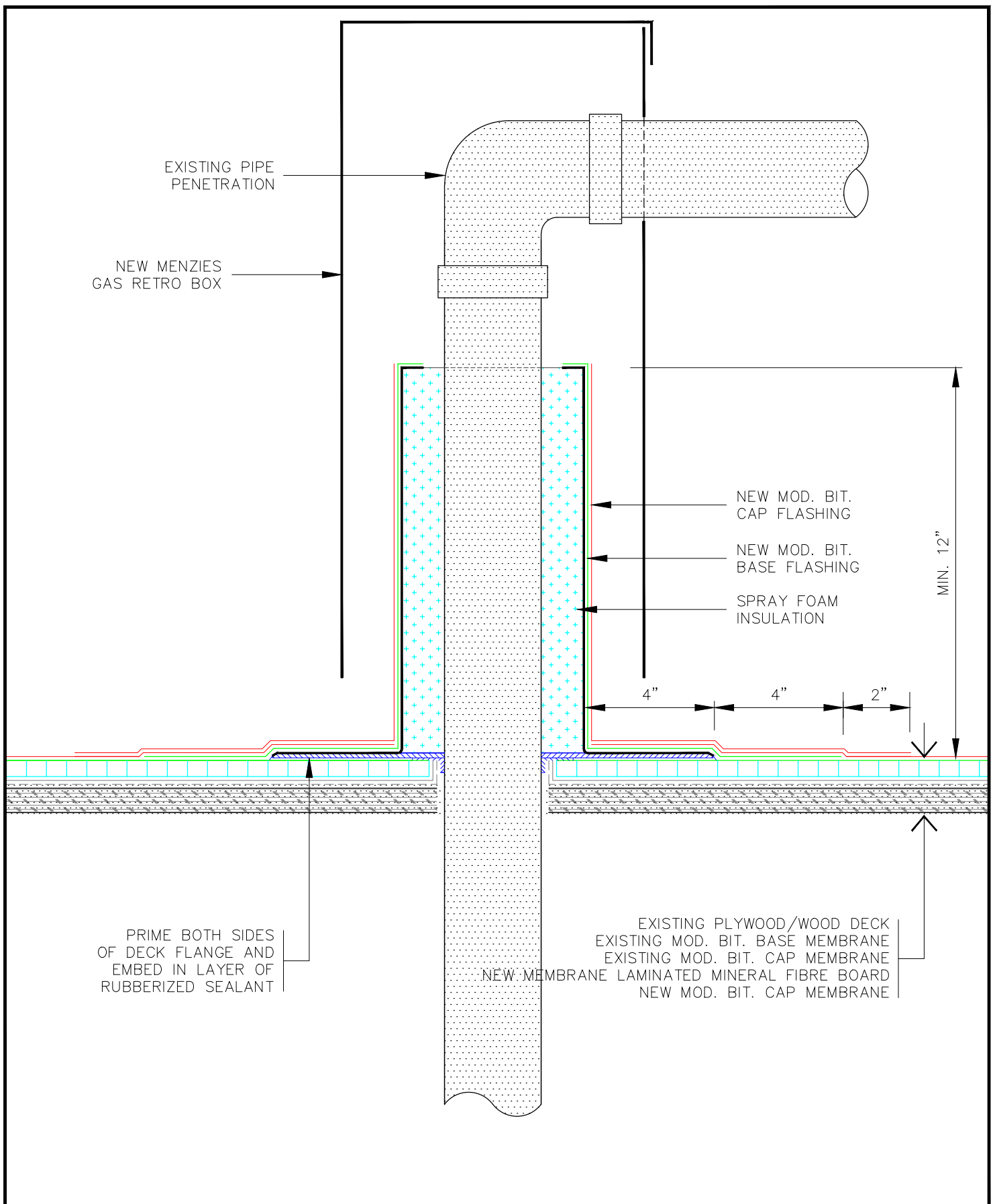
SCALE: 3" = 1'-0"

DATE:

DWG.#:

VRMM608

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TITLE: GAS RETRO BOX DETAIL

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REVISED:

REV'N.#:

DRN. BY:

RM

CHK. BY:

T.A.A.

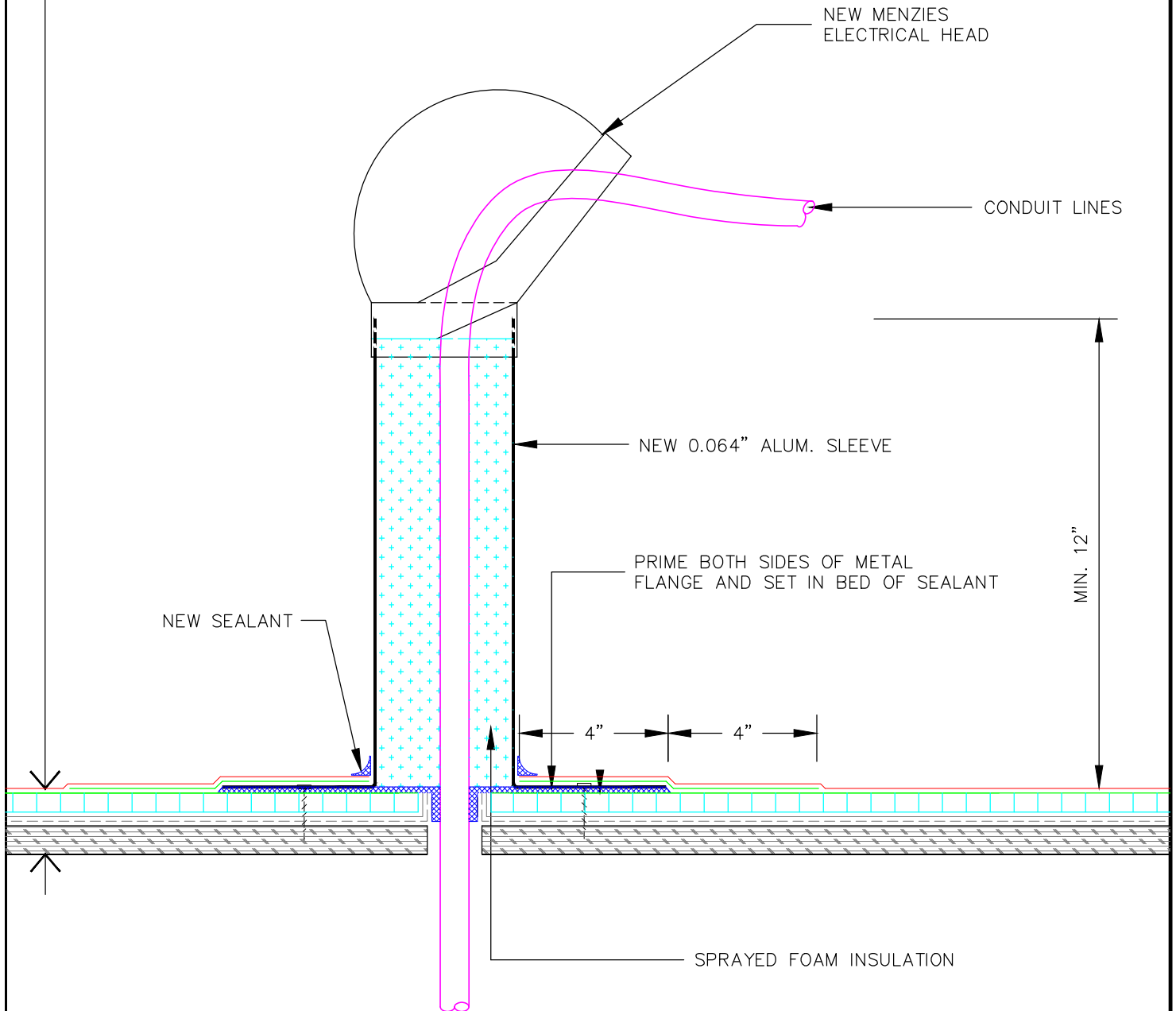
SCALE: 3" = 1'-0"

DATE:

DWG.#:

VSM628

NEW MOD. BIT. CAP MEMBRANE
 NEW MEMBRANE LAMINATED MINERAL FIBRE BORAD
 EXISTING MOD. BIT. CAP MEMBRANE
 EXISTING MOD. BIT. BASE MEMBRANE
 EXISTING PLYWOOD DECK



TITLE: CONDUIT DETAIL:
 ELECTRICAL ROOF FLASHING

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REVISED:

REV'N.#:

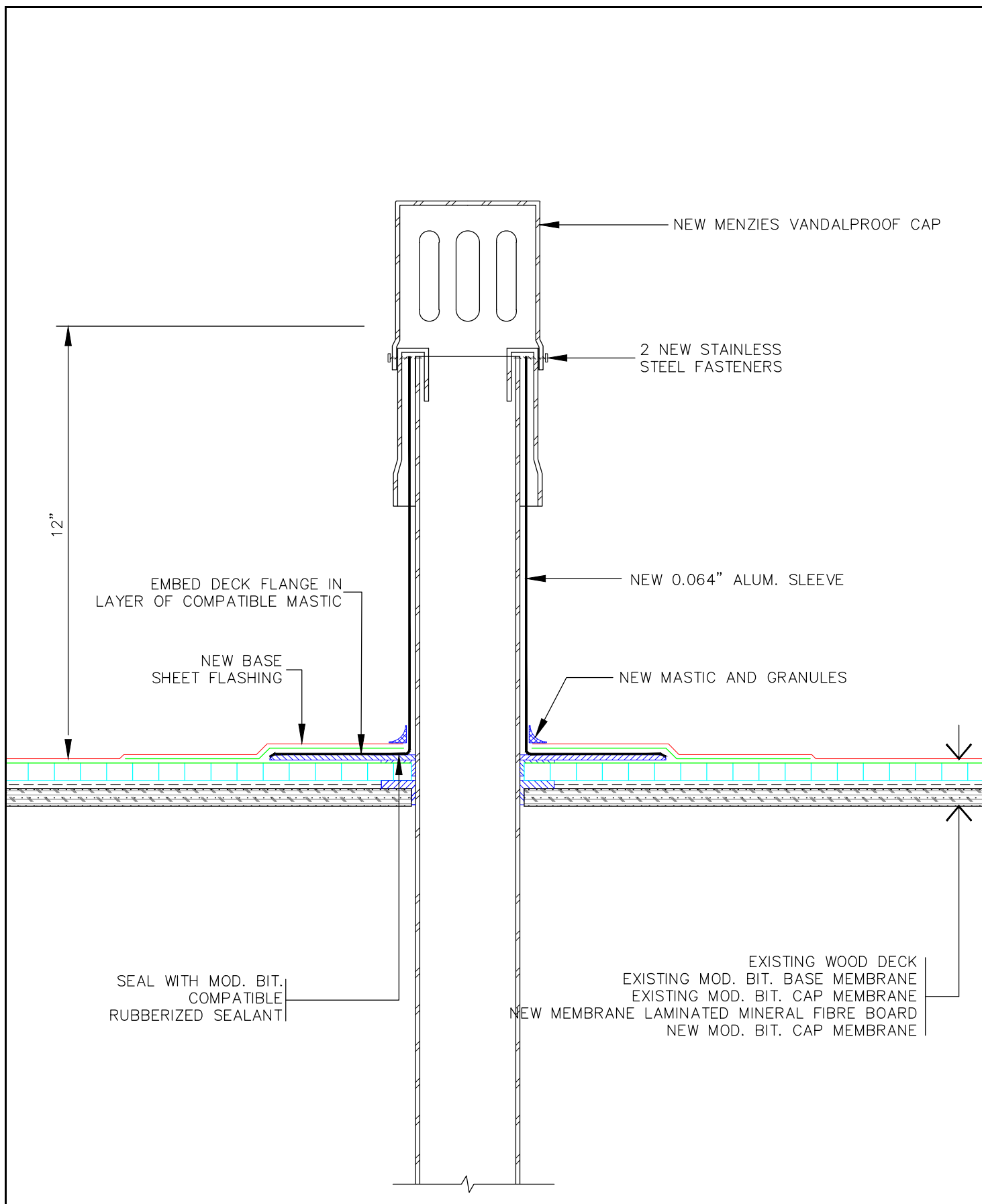
DRN. BY: R.M.

CHK. BY: T.A.A.

SCALE: 3"=1'-0"

DATE:

DWG.#: VSMM629



TITLE: PLUMBING STACK DETAIL

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REVISED:

REV'N.#:

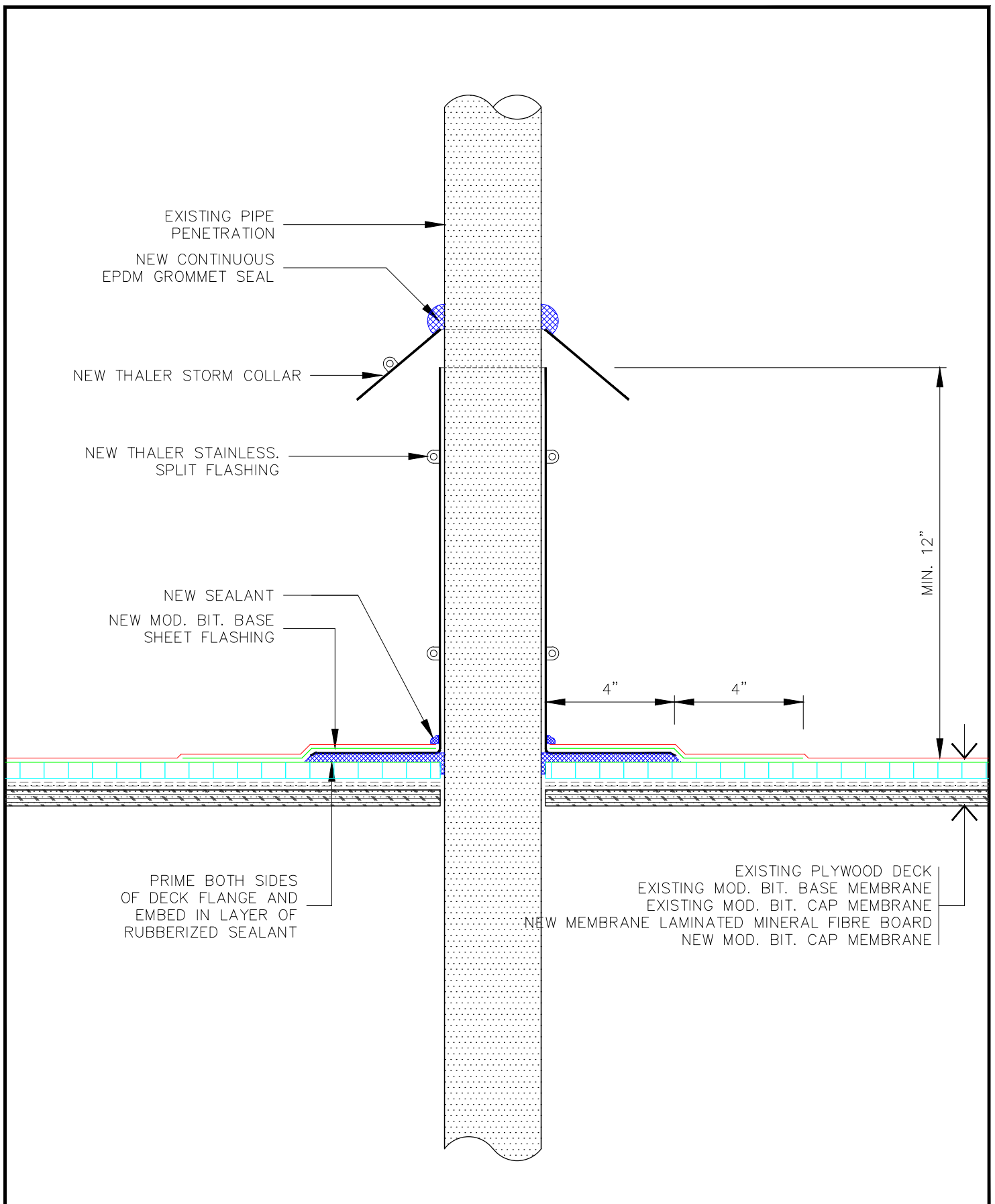
DRN. BY: R.M

CHK. BY: T.A.A.

SCALE: 3" = 1'-0"

DATE:

DWG.#: VSMM635



TITLE: PIPE FLASHING DETAIL

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REV'N.#:

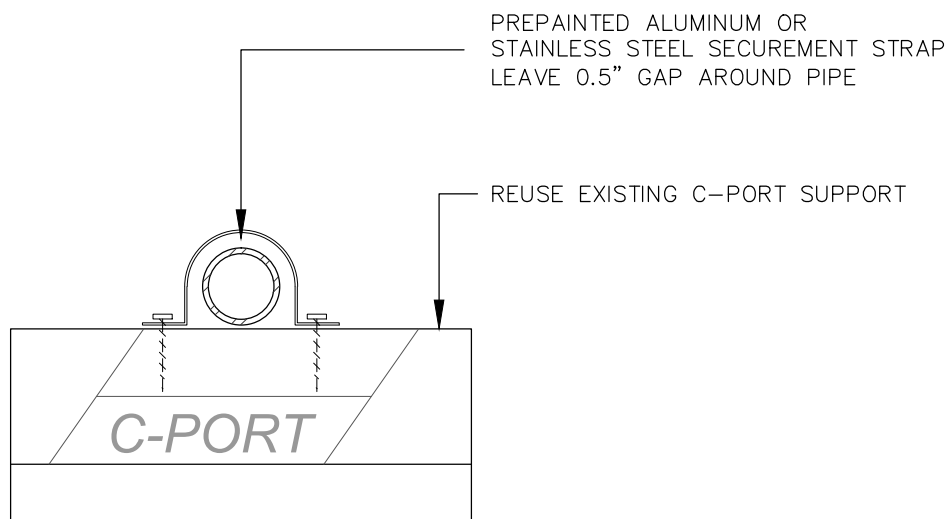
DRN. BY: R.M.

CHK. BY: T.A.A.

SCALE: 3" = 1'-0"

DATE:

DWG.#: VSMM641



EXTRA 1'X1' 1 PLY MOD. BIT. CAP MEMBRANE



TITLE: GASLINE/CONDUIT SUPPORT

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REVISED:

REV'N.#:

DRN. BY: R.M.

CHK. BY: T.A.A

SCALE: 3" = 1'-0"

DATE:

DWG.#: VVMN050

**SCHEDULE B
APPENDICES 3 THROUGH 11**

Information from Schedule C of the RFQ will be inserted at the time of the award of the Contract:

Schedule B – Appendix 3	Schedule of Prices
Schedule B – Appendix 4	Construction Schedule
Schedule B – Appendix 5	Key Personnel, Sub-Contractors, and Material Suppliers

Forms to be included at the time of the award of the contract:

Schedule B – Appendix 6	Prime Contractor Designation
Schedule B – Appendix 7	Contractor Health & Safety Expectations (Responsibility of Contractor(s))
Schedule B – Appendix 8	Statutory Declaration
Schedule B – Appendix 9	Form 3 <i>Builders Lien Act</i> (Section 7(10)) Certification of Completion
Schedule B – Appendix 10	Form 2 <i>Builders Lien Act</i> (Section 7 (4)) Notice of Certification of Completion
Schedule B – Appendix 11	Post Compliance Form Certification of Completion



SCHEDULE C - QUOTATION

RFQ Title: Roof Replacement - Bridgeview Community Centre

RFQ No: 1220-040-2016-073

CONTRACTOR

Legal Name: _____

Address: _____

Phone: _____

Fax: _____

Email: _____

TO:

City Representative: Richard D. Oppelt, Purchasing Manager

Address: Surrey City Hall
Finance & Technology Department – Purchasing Section
Reception Counter 5th Floor West
13450 – 104 Avenue, Surrey, B.C., Canada, V3T 1V8

Email for PDF Files: purchasing@surrey.ca

1. If this Quotation is accepted by the City, a contract will be created as described in:
 - (a) the Agreement;
 - (b) the RFQ; and
 - (c) other terms, if any, that are agreed to by the parties in writing.
2. Capitalized terms used and not defined in this Quotation will have the meanings given to them in the Agreement and RFQ. Except as specifically modified by this Quotation, all terms, conditions, representations, warranties and covenants as set out in the Agreement and RFQ will remain in full force and effect.
3. I/We have reviewed the Sample Agreement (Schedule B). If requested by the City, I/we would be prepared to enter into the Sample Agreement, amended by the following departures (list, if any):

Section**Requested Departure(s) / Alternative(s)**

4. The City requires that the successful Contractor have the following in place **before providing the Work**:

- (a) Workers' Compensation Board coverage in good standing and further, if an "Owner Operator" is involved, personal operator protection (P.O.P.) will be provided,
Workers' Compensation Registration Number _____;
- (b) Prime Contractor qualified coordinator is Name: _____
and Contact Number: _____;
- (c) Insurance coverage for the amounts required in the proposed Agreement as a minimum, naming the City as additional insured and generally in compliance with the City's sample insurance certificate form available on the City's Website at www.surrey.ca. search [Standard Certificate of Insurance](#);
- (d) City of Surrey or Intermunicipal Business License: Number _____;
- (e) If the Contractor's goods and services are subject to GST, the Contractor's GST Number is _____; and
- (f) If the Contractor is a company, the company name indicated above is registered with the Registrar of Companies in the Province of British Columbia, Canada, Incorporation Number _____.

As of the date of this Quotation, we advise that we have the ability to meet all of the above requirements **except as follows** (list, if any):

Section**Requested Departure(s) / Alternative(s)**

5. The Contractor acknowledges that the departures it has requested in Sections 3 and 4 of this Quotation will not form part of the Contract unless and until the City agrees to them in writing by initialing or otherwise specifically consenting in writing to be bound by any of them.

Changes and Additions to Specifications and Scope:

6. In addition to the warranties provided in the Agreement, this Quotation includes the

7. I/We have reviewed the RFQ, Schedule A – Scope of Work and Drawings. If requested by the City, I/we would be prepared to meet those requirements, amended by the following departures and additions (list, if any):

Requested Departure(s) / Alternative(s) / Addition(s)

Fees and Payments

8. The Contractor offers to supply to the City of Surrey the Goods and Services for the prices plus applicable taxes as follows:

F.O.B. Destination		Payment Terms: A cash discount of ____% will be allowed if invoices are paid within ____ days, or the ____ day of the month following, or net 30 days, on a best effort basis.	Ship Via:
Item #	Item Name	Amount	
	<p>To provide all labour, materials, plant and equipment and all other services necessary for the performance of the Work as stated in the specifications and drawings. Job site location 11475 126A Street Surrey, B.C., V3W 2P1</p> <p>The detailed scope of Work is as described on the Contract Drawings (Schedule B – Appendix 2A), Special Provisions (Schedule B – Appendix 1), and Supplementary Specifications (Project) (Schedule B- Appendix 2).</p> <ul style="list-style-type: none"> - Replacement of Roof Areas 1.1 and 2.1, (with a 10-year RCABC RoofStar Guarantee) - Replacement of Skylight on Roof Area 2.1, (with a 10-year RCABC RoofStar Guarantee) - Wood Block replacement - Wood decking replacement <p>Note: Overheads, General Conditions and Profit are to be included in the above amounts.</p>	<p>\$ _____</p> <p>\$ _____</p> <p>\$ _____</p> <p>\$ _____</p>	
CURRENCY: Canadian		Subtotal (lump sum roofs 1, 2 & 3):	\$ _____
		GST (5%):	\$ _____
		TOTAL QUOTATION PRICE:	\$ _____

List of Alternate Prices:

9. The following is a list of Alternate Price(s) to the Work and forms part of this RFQ, upon the acceptance of any or all of the Alternate Price(s). The Alternate Prices are an addition or a deduction to the Total Quotation Price and do not include GST. DO NOT state a revised Total Quotation Price.

Description of Alternate Prices	Addition	Deduction
AP-1. Credit to reduce RCABC RoofStar Guarantee in sub-total (lump sum roofs 1, 2 & 3) from 10-year to a 5-year (before taxes): \$ []	\$ []

List of Separate Prices:

10. The following is a list of Separate Price(s) to the Work and forms part of this RFQ, upon the acceptance of any or all of the Separate Price(s). The Separate Prices are an addition or a deduction to the Total Quotation Price and do not include GST. DO NOT state a revised Total Quotation Price.

Description of Separate Price Items	Addition	Deduction
SP-1.	\$[]	\$[]
SP-2.	\$[]	\$[]

Force Account Labour and Equipment Rates:

11. Contractors should complete the following tables setting out the all-inclusive hourly labour rates including overhead and profit for approved extras/credits for all applicable categories of labour (use the spaces provided and/or attach additional pages, if necessary):

Table 1 – Hourly Labour Rate Schedule:

Labour Category	Straight Time/hr (Plus GST)	Overtime Rate/hr (Plus GST)
.1 Journeyman Carpenter	\$	\$
.2 Journeyman Roofer	\$	\$
.3 Apprentice Roofer	\$	\$
.4 Journeyman Sheet Metal	\$	\$
.5 Apprentice Sheet Metal	\$	\$
.6 Labourer	\$	\$

Table 2 – Hourly Equipment Rate Schedule:

No.	Equipment Description	Hourly Equipment Rate
		\$
		\$

Metro Vancouver's Non-Road Diesel Engine Emissions Regulation By-law No. 1161, 2012 (the Bylaw)

12. Contractor should confirm they are in compliance with By-law (if applicable)

☐ Applicable as follows ☐ Not applicable to this project

No.	Equipment Description	Engine Tier Designation	Engine Registration Number as Issued by Metro Vancouver
1		<input type="checkbox"/> Tier 0 or <input type="checkbox"/> Tier 1	
2		<input type="checkbox"/> Tier 0 or <input type="checkbox"/> Tier 1	
3		<input type="checkbox"/> Tier 0 or <input type="checkbox"/> Tier 1	
4		<input type="checkbox"/> Tier 0 or <input type="checkbox"/> Tier 1	
5		<input type="checkbox"/> Tier 0 or <input type="checkbox"/> Tier 1	

Construction Schedule:

13. Contractors should provide an estimated schedule, with major item descriptions and time indicating a commitment to perform the Contract within the time specified (use the spaces provided and/or attach additional pages, if necessary).

- (a) Commence the Work on or before: _____; and
(b) Substantial Performance: _____.

Contractor may provide a Microsoft Project (or similar) schedule outlining the Critical Path and should include all major phases of the Work and indicate start and substantial completion dates for each.

ACTIVITY	SCHEDULE									
	1	2	3	4	5	6	7	8	9	10

Proposed Disposal Site: _____

Key Personnel & Subcontractors:

14. Contractor to provide information on the background and experience of all key personnel proposed for the performance of the Work (use the spaces provided and/or attach additional pages, if necessary):

Key Personnel

Name: _____
Experience: _____
Dates: _____
Project Name: _____
Responsibility: _____

15. Contractor to provide the following information on the background and experience of all proposed subcontractors and material suppliers for the divisions or sections of the work/or supply listed below: (use the spaces provided and/or attach additional pages, if necessary): [Note: It is not necessary for Contractor to list all subcontractors and material suppliers that the Contractor proposes to use – only those for the divisions or sections of work / supply listed below]

<i>Description Of Work/supply</i>	<i>Subcontractor & Material Supplier Names</i>	<i>Years Of Working With Contractor</i>	<i>Telephone Number and Email</i>

The City reserves the right of approval for each of the subcontractors and material suppliers. The Contractor will be given the opportunity to substitute an acceptable subcontractor and material supplier, if necessary.

Experience and References:

16. Contractor's relevant **experience and qualifications** for the performance of the Work similar to those required by the Agreement (use the spaces provided and/or attach additional pages, if necessary):

17. Contractor's **references** for work performed by your firm of a similar nature and value (name and telephone number) (use the spaces provided and/or attach additional pages, if necessary). The City's preference is to have a minimum of three references. Previous clients of the Contractor may be contacted at the City's discretion.

18. I/We the undersigned duly authorized representatives of the Contractor, having received and carefully reviewed the RFQ and the Agreement, submit this Quotation in response to the RFQ.

This Quotation is executed by the Contractor this _____ day of _____, 20__.

CONTRACTOR

I/We have the authority to bind the Contractor.

(Legal Name of Contractor)

(Signature of Authorized Signatory)

(Signature of Authorized Signatory)

(Print Name and Position of Authorized Signatory)

(Print Name and Position of Authorized Signatory)

ATTACHMENT 1 - CITY OF SURREY, PROJECT COMPLETION DELIVERABLES WORKSHEET

Project Name: _____

Project Address: _____

Date: _____

End of Project Walk-through: _____

End of Project Walk-through: _____

City Representative: _____

Contractor/Contractor Rep: _____

Department: _____

Company Name: _____

Contact phone number: _____

Contact phone number: _____

Fax number: _____

Fax number: _____

A. BUILDING PERMITS – CLOSED OUT

- ☐ Architectural
- ☐ Electrical
- ☐ Mechanical / Plumbing
- ☐ Structural
- ☐ Other

B. O&M MANUALS RECEIVED

**Shop Drawings to be included in O&M Manuals*

Architectural

- ☐ 1 Electronic (PDF) file
- ☐ 2 Hardcopies

Electrical

- ☐ 1 Electronic (PDF) file
- ☐ 2 Hardcopies

Mechanical

- ☐ 1 Electronic (PDF) file
- ☐ 2 Hardcopies

Other(s)

- ☐ 1 Electronic (PDF) file
- ☐ 2 Hardcopies

C. PROJECT CLOSE-OUT

- ☐ Project Summary Report
- ☐ Substantial Completions
- ☐ Deficiencies List
- ☐ Transfer of Utilities (Hydro/Teresan)
Notify City of Surrey (604-591-4804)
- ☐ Asset Inventory Forms including HVAC
- ☐ TCA Cost Summary Finance, & Warranty
Information sheets & Project summary
with graphics
- ☐ Final Occupancy Certification
- ☐ All documentation/correspondence
pertaining to the project (File Share Device)

D. FALL PROTECTION / RESTRAINT SYSTEM

- ☐ Complete
- ☐ Wall plaques displayed as required
- ☐ 1 (PDF) containing the Fall Protection Safety

E. AS-BUILT DRAWING SUBMITTALS

Architectural

- ☐ 1 Set of AutoCAD As-Built DWG files
- ☐ 1 Set of PDF As-Built drawings
- ☐ 1 Set of paper construction drawings

Civil

- ☐ 1 Set of AutoCAD As-Built DWG files
- ☐ 1 Set of PDF As-Built drawings
- ☐ 1 Set of paper construction drawings

Electrical

- ☐ 1 Set of AutoCAD As-Built DWG files
- ☐ 1 Set of PDF As-Built drawings
- ☐ 1 Set of paper construction drawings

Fire Protection

- ☐ 1 Set of AutoCAD As-Built DWG files
- ☐ 1 Set of PDF As-Built drawings
- ☐ 1 Set of paper construction drawings

Landscaping

- ☐ 1 Set of AutoCAD As-Built DWG files
- ☐ 1 Set of PDF As-Built drawings
- ☐ 1 Set of paper construction drawings

Mechanical / Plumbing

- ☐ 1 Set of AutoCAD As-Built DWG files
- ☐ 1 Set of PDF As-Built drawings
- ☐ 1 Set of paper construction drawings

Structural

- ☐ 1 Set of AutoCAD As-Built DWG files
- ☐ 1 Set of PDF As-Built drawings
- ☐ 1 Set of paper construction drawings

Other:

- ☐ 1 Set of AutoCAD As-Built DWG files
- ☐ 1 Set of PDF As-Built drawings
- ☐ 1 Set of paper construction drawings

F. FIRE SAFETY PLAN

- ☐ Complete
- ☐ Wall plaques displayed throughout facility
- ☐ 1 Electronic (PDF) file of the fire safety plan
- ☐ 2 paper copies of the fire safety plan

System

Signed: _____

City Representative

Contractor Representative

Internal Representative

Fire Chief/ Representative

ATTACHMENT 2

PRIME CONTRACTOR DESIGNATION LETTER OF UNDERSTANDING

As per the requirements of the *Workers' Compensation Act* Part 3, Division 3, Section 118 (1-3), which states:

Coordination of multiple-employer workplaces

118 (1) *In this section:*

"multiple-employer workplace" means a workplace where workers of 2 or more employers are working at the same time:

"prime contractor" means, in relation to a multiple-employer workplace,

- (a) the directing contractor, employer or other person who enters into a written agreement with the owner of that workplace to be the prime contractor for the purposes of this Part, or
- (b) if there is no agreement referred to in paragraph (a), the owner of the workplace.

(2) The prime contractor of a multiple-employer workplace must

- (a) ensure that the activities of employers, workers and other persons at the workplace relating to occupational health and safety are coordinated, and
- (b) do everything that is reasonably practicable to establish and maintain a system or process that will ensure compliance with this Part and the regulation in respect to the workplace.

(3) Each employer of workers at a multiple-employer workplace must give to the prime contractor the name of the person the employer has designated to supervise the employer's workers at that workplace.

By signing this Agreement, the Contractor accepts all responsibilities of a prime contractor as outlined in the *Workers' Compensation Act*, and *WorksafeBC OH&S Regulation*.

As a Contractor signing this Prime Contractor Designation form with the City of Surrey (the "owner"), you are agreeing that your company, management staff, supervisory staff and workers will comply with the *Workers' Compensation Board (WCB) Occupational Health and Safety Regulation* and the *Workers' Compensation (WC) Act*.

Any *WorksafeBC OH&S* violation by the prime contractor may be considered a breach of contract resulting in possible termination or suspension of the agreement and/or any other actions deemed appropriate at the discretion of the City.

Any penalties, sanctions or additional costs levied against the City, as a result of the actions of the prime contractor are the responsibility of the prime contractor.

The Contractor acknowledges having read and understood the information above.

By signing this Prime Contractor Designation form, the Contractor agrees as a representative of the firm noted below, to accept all responsibilities of the prime contractor for this project.

The Contractor understands and accepts the responsibilities of the prime contractor designation in accordance with the *Workers' Compensation Act* while contracted by the City of Surrey for project and will abide by all *Workers' Compensation Board Regulation* requirements.

Project File No.: 1220-040-2016-073

Project Title and Site Location: 11475 126A Street, Surrey, B.C., V3W 2P1

Prime Contractor Name: _____

Prime Contractor Address: _____

Telephone/Fax Numbers: Phone: _____ Fax: _____

Name of Person in Charge of Project: _____

Name of Person Responsible for Coordinating Health & Safety Activities: _____

Phone: _____

Prime Contractor Signature: _____ Date: _____

Please return a signed copy of this memo to the City of Surrey, Finance & Technology Department, Purchasing Section, 13450 – 104 Avenue, Surrey, British Columbia, V3T 1V8

If you have any questions, please contact the City of Surrey, Manager Occupational Health & Safety at 604-591-4658.

ATTACHMENT 3

CONTRACTOR HEALTH & SAFETY EXPECTATIONS

RESPONSIBILITY OF CONTRACTOR(S)

The City of Surrey strives to maintain a safe work environment for employees and contractors and insists upon the enforcement of safe practices and procedures in all premises and in all work activities. It is essential that all contractors and their employees and sub-contractor(s) perform in the same manner. It is every employers and contractors responsibility to ensure that staff and public are protected from workplace hazards.

As a contractor to the City of Surrey, you are expected to conform to the requirements of the Workers' Compensation Act, the WCB Occupational Health and Safety Regulation and to all federal, provincial and local laws and regulations. The City of Surrey Building Owner, Project Manager, and the Manager, Occupational Health & Safety or designate have the authority to order an unsafe act to cease or to have an unsafe piece of equipment removed from the premises or, in extreme situations, to shut down a job entirely. Any City of Surrey Employee that observes a safety infraction by a contractor performing work for the City of Surrey should bring it to the attention of a manager immediately or Occupational Health & Safety (604-591-4131).

The following information is provided as typical City of Surrey requirements, but does not relieve the contractor from complying with all applicable local, provincial and federal laws, regulations and bylaws.

PERSONNEL

1. You are expected to inform your employees of any potential hazard in the workplace and advise of appropriate action to be taken should a hazard be found or a fire or accident occur.
2. Contractors will restrict persons invited on the premises to employees only. No families or friends are permitted.
3. The contractor will advise the City of any on-site accidents involving the contractor's employees, or injuries to others caused by the contractor's business.

SAFETY MANAGEMENT SYSTEM

1. Contractors will ensure their employees utilize proper safety equipment and clothing as required for job site activities.
2. Contractors must follow and have on site proper written safe work procedures for hazardous work, e.g. Fall protection, confined space entry, hotwork, lockout, excavations and shoring, traffic management, etc.
3. Contractor must Identify workplace risk and implement suitable controls.
4. Contractor must provide safety training and education to staff and have training records available for review.
5. Contractor must have a health & safety program for its workers and sub-contractors
6. Contractor will provide appropriate First-Aid coverage for their workers and subcontractors.
7. Contractor must forward a weekly work task list prior to work commencement.
8. The qualified safety coordinator must participate in the City of Surrey OHS Orientation or attend the Prime Contractor's Orientation.

WORK AREAS –City Facilities

No work by contractors shall occur in any area without prior consent of the City of Surrey Manager, Civic Facilities or his designated representative. Work during normal business hours of the City shall not create undue noise, smells or otherwise unduly disturb the work of City of Surrey staff or the public. If an activity requires that a disturbance is likely, the contractor shall whenever possible only do that work outside normal business hours.

All activities that create a hazard (i.e. work from a ladder, removal of a floor tile, emission of VOC's, etc.) to persons outside the contractor's supervision shall have warning devices, delineation or barriers, sealed spaces, etc. as would normally be required to protect any person from that hazard.

SAFETY ATTITUDE

Your safety record and attitude are important criteria used to judge your qualification for future bidding on solicitations with the City of Surrey.

You can help ensure employee safety and your eligibility for future business with the City if you exhibit and practice a "Safe Work - Safe City" attitude.

The City of Surrey is concerned about the health, safety and wellbeing of all employees and contractors. It is essential we maintain a healthy, safe and productive work environment.

All Employees & Contractors:

It is everyone responsibility to:

- ❖ know and comply with WCB regulations and
- ❖ follow established safe work procedures
- ❖ immediately report any work related injury to his/her supervisor; and to the city representative
- ❖ not remain on the work site while his/her ability to work is in any way impaired
- ❖ report unsafe acts and conditions to their supervisor
- ❖ correct unsafe conditions immediately whenever it is possible to do so
- ❖ take reasonable care to protect your health & safety and the health and safety of other persons who may be affected by your act's or omissions at work



An employee must refuse to work if continuing to do so would endanger the health and safety of the employee, fellow employees or others. The worker must immediately report the circumstances of the unsafe condition to his or her supervisor or manager. If the unsafe condition is not remedied or the issue is not resolved the Manager, Occupational Health & Safety must be contacted.

A common sense approach usually resolves the issue.

GENERAL RULES

1. For all secured worksites, contracted workers are required to sign in and sign out each day
2. (Access cards may be issued – a worker may need to provide an Identification document (i.e. Driver's License) in exchange).
3. Personal protective equipment, as determined by the City, through consultation with the Contractors Health and Safety Representatives must be worn when and where required. (Hard Hats, Safety Footwear, Safety Vests and Safety Glasses must be worn on active construction sites. Hearing Protection must be worn when noise levels are above 85dBA.)
4. Horseplay, gambling and the use of alcohol or narcotics will not be tolerated.
5. No Smoking within 7.5M of a City owned buildings door exits, windows and vents.
6. Report **ALL** injuries to your supervisor immediately and notify the City's site representative.
7. Report any unsafe conditions, including someone under the influence or hazards, which may allow an injury to occur to you, a fellow worker, or others on the worksite.
8. Report any property damage, regardless of how minor.
9. Restricted and controlled products will be labeled, used and stored in accordance with the associated regulations, e.g. WHMIS. Follow all procedural instructions when using or handling hazardous materials/controlled products and ensure that all containers of hazardous/controlled product materials are properly labelled and stored in designated areas.
10. Obey all posted signs and notices. Do not venture into areas that you are not authorized to enter.
11. Always use the correct posture when lifting and get assistance if the weight is excessive.
12. Do not work within the limits of approach to high voltage equipment.
13. If working at heights greater than 10 feet a Fall Protection system must be in place. The appropriate Fall Protection equipment must be worn at all times.
14. **Housekeeping** (Orderliness and good housekeeping are basic requirements and must be maintained at all times):
 - a) Aisles are to be kept clear at all times.
 - b) Individual work areas are to be kept clean and tidy.
 - c) All materials, tools, products and equipment are to be kept in their designated areas.
 - d) Liquid spills are to be cleaned up immediately to prevent slips and falls.
 - e) Accumulation of oily rags, combustible refuse or similar fire hazards will not be tolerated.
15. **Fire Prevention:**
 - a) Become familiar with Surroundings and emergency exit.
 - b) Ensure aisles and exits are not blocked at any time.
 - c) Anytime a fire extinguisher is used, report it immediately to your supervisor, so that it can be recharged.

16. Equipment Operation (Any equipment, which could create a hazard, must be maintained in good condition):

- a) Equipment must not be repaired, adjusted or operated unless by a "competent person" who understand the safe operating procedures.
- b) Always be aware of the use and location of the "EMERGENCY STOP" button, if equipment is so equipped, before using the equipment.
- c) Loose clothing, jewelry and long hair must be secured to prevent becoming entangled with equipment.
- d) The Operator must check all safety devices on equipment before operation.
- e) All equipment must be turned off and the appropriate "lock-out" procedure followed, prior to repairs, cleaning, adjustment or lubrication.
- f) Radio/Walkman/I-pod Head phones are not allowed to be worn during regular work operations.
- g) All ladders must be of an approved type and length. Unacceptable ladders must be removed immediately from the premises.
- h) All vehicles and equipment on City property must be kept in safe mechanical condition at all times, and be operated only by persons with a valid driver's license and/or proper training and qualifications.
- i) Contractors will not operate any equipment, valves, switches, etc., which are part of the City's operation, unless specific permission is received from the Department Representative.

17. Ground Disturbance –Every time you dig in the ground, with a shovel or mechanized equipment, you run the risk of loss of life or damage to property if you hit any of the many buried cables, conduits, gas or oil pipelines and/or other underground facilities that serve our city, **BC One Call Must be called and a ticket obtained prior to commencing any ground disturbance activities.**

Issued By:	Occupational Health & Safety Section - Contractor Coordination Program
Date:	Revised: January 14, 2014 Original: August 15, 2014
Distributed:	Via Email & Posted on Intranet: January 16, 2015: <u>August 15, 2014</u>

This document does not replace the Workers' Compensation Act or WorkSafeBC OH&S regulation. Each individual Contractor must have specific health and safety safe work rules and procedures that apply to their work tasks. Each Contractor must comply with the Workers' Compensation Act and WorkSafeBC Occupational Health & Safety Regulation and to all federal, provincial and local laws and regulations. If a contractor is unable to comply they must bring this to the attention of their qualified safety representative and to the Prime Contractor safety representative immediately.

Authorized Signature: _____

Name: _____

(Please Print)

Date: _____