



REQUEST FOR QUOTATIONS

Title: Holly Pool Re-roofing

Reference No.: 1220-040-2018-103

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 reference 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 which must be delivered 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 [604-590-7274] 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 (1) original unbound Quotation and one (1) copy (two (2) in total) which must be delivered to the City at the office of:

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

Address: Surrey City Hall
Finance Department – Purchasing Section
Reception Counter 5th Floor West
13450 – 104th Avenue,
Surrey, BC V3T1V8, Canada

3. DATE

The City would prefer to receive Quotations on or before **December 14, 2018**. 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: **1220-040-2018-103**

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 of the Contractor and the authorized signatory of the City have signed. Delivery of the signed Contract by the City may be by fax, pdf e-mail or hard copy. In that event, the 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.

10. CONFLICT OF INTEREST

A Contractor should 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: Friday, November 30, 2018

Time: 10:00 am

Location: Holly Pool – 10662 148 Street, Surrey, BC

It is possible that some questions raised and information provided during the Information Meeting may be the only source of critical information essential to prepare and submit a successful Quotation. Contractors are responsible to ensure they are fully informed and have a clear understanding of the requirements.

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 of the Work.

Note: No minutes of the information meeting and site tour will be provided

The Contractor is responsible for parking fees, if applicable.

SCHEDULE A – SCOPE OF WORK AND DRAWINGS

PROJECT TITLE: Holly Pool Re-roofing

PROJECT No.: 1220-040-2018-103

1. DESCRIPTION OF SCOPE OF WORK

For certainty, the Work contemplated by this Schedule A shall be interpreted to include compensation on account of all related costs, including but not limited to all direct, indirect, or impact, head office, Overhead, and all other costs, and all markups and profits, even if the Contract Documents does not specifically mention such items.

The Contractor shall furnish everything needed to perform all of the requirements of this Contract including without limitation any and all material required but not supplied by the City, all labour, transportation and services required to faithfully perform and provide the Work at the Place of Work as required for and to the satisfaction of the City.

The Work on this project generally includes, but is not limited to:

- Removal and disposal of existing roof membrane system and installation of a new replacement 2 play modified bitumen membrane system as detailed in the attached specification

Place of Work location is 10662 - 148 Street, Surrey, BC.

Furnish certificates confirming work conforms to requirements of authorities having jurisdiction.

The detailed scope of work is as described in 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.

**SCHEDULE B
SAMPLE – CONSTRUCTION CONTRACT**

Title: Holly Pool Re-roofing

Contract No.: 1220-040-2018-103

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

BETWEEN:

CITY OF SURREY

13450 – 104th Avenue
Surrey, BC V3T 1V8, Canada

(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:

Removal and disposal of existing roof membrane system and installation of a new replacement 2
play modified bitumen membrane system as detailed in the attached specifications

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 an addition to, deletion from or alteration of the Work;
- (d) **"Change Order"** means a Change is approved, the Consultant shall issue 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. The value of the Work performed in a Change shall be included for payment with the certificates for payment;
- (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. The Consultant is the Architect, the Engineer or entity licensed to practice in the province of British Columbia. The term Consultant means the Consultant of the Consultant's authorized representative;
- (g) **"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 [], a future Appendix;**
- (h) **"Contract"** means this Contract as set out and described in the Contract Documents;
- (i) **"Contract Documents"** means this Contract including all schedules and appendices, construction standards, specifications and drawings;
- (j) **"Contract Price"** means the price of the Work as set out Section 4.1 of this Contract;
- (k) **"Contract Time"** means the period of time for the completion of the Work as provided by the Contract Documents;
- (l) **"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;
- (m) **"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;
- (n) **"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;
- (o) **"Extra Work"** has the meaning set out in Section 33;

- (p) **“Overhead”** means all costs associated with management, supervision, insurance, as-built preparation and warranty, administration and supervision at the Place of Work (including the provision of and maintaining office coordination, office costs, supervision, site trailer, telephone service, and long distance charges) courier, permits, insurance and small tools and general office supplies as required for the performance of the 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”** is as defined in the lien legislation applicable to the province of British Columbia;
- (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 – START/COMPLETION DATES

- 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 [], a future Appendix and Appendix [], a future Appendix
- 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 [], a future Appendix as required by the Contract Documents and will achieve Substantial Performance of the Work on or before <<insert date of substantial performance>> 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 For greater certainty, 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, General Conditions and all other costs and expenses whatsoever incurred in performing the Work, even if the Contract Documents does not specifically mention such items. 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 Consultant 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, should 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.
- 6.6 Payments to Contractors can be made through Electronic Funds Transfer (EFT), directly into the Contractor's bank account. An EFT application form can be provided to the successful Contractor for completion.

SUBMITTING YOUR ELECTRONIC INVOICE

Please send electronic invoices to the City of Surrey by email to surreyinvoices@surrey.ca.

In order to process your payment, the following submission guidelines must be met:

- Each Invoice must be sent as a separate attachment
- Attachment(s) must be in PDF format.
- PDF attachment(s) must be named: <<Company name>>_<<Invoice Number>>
- Include Purchase Order number (to be provided).
- Email(s) must not exceed 2MB.

Please Note: failure to meet the guidelines above may result in payment processing delays or in your payment not being processed.

- 6.7 The City shall not be liable for interest or overdue charges on any invoice.
- 6.8 Unless otherwise provided, all dollar amounts referred to in this Contract are in lawful money of Canada.
- 6.9 If the Contractor is a non-resident of Canada and does not provide to the Library a waiver of regulation letter, the City will withhold and remit to the appropriate governmental authority the greater of:
 - (a) 15% of each payment due to the Contractor; or
 - (b) the amount required under applicable tax legislation.

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:
 - (a) by estimate and acceptance in a lump sum; or
 - (b) by unit prices as set out in the Contract, or subsequently agreed upon; or
 - (c) by actual cost and an allowance for Overhead and profit as follows:
 - 1. Contractor's Overhead and profit on expenditures from cash allowances, shall be included in the Contract Price, except the Contractor is entitled to additional Overhead and profit only on the portion of the change greater than the cash allowance. If the change is less than the cash allowance the Contract Price shall be decreased by the amount of the change without adjustment for the Contractor's Overhead and profit;
 - 2. for changes in the Work not covered by cash allowances:
 - (i) if there is no increase or decrease in the Contract Price the Contractor is not entitled to any Overhead and profit on the change,

- (ii) if the Contract Price is increased, the Contractor is entitled to an additional:
 - .1 10% Overhead and profit on Work performed directly by the Contractor, and
 - .2 5% on Work performed by the Subcontractor, only on the portion of the increase in the Contract Price, and
 - .3 0% on design services and work performed by the Contractor's consultants;
- (iii) if the Contract Price is decreased by the change the Contractor is not entitled to Overhead and profit on the reduction in the Contract Price;
- 3. the Subcontractor or the sub-subcontractor Overhead and profit shall be 5% of the actual cost of all Subcontractor's or sub-subcontractor's changes in the Work; and
- 4. where the change involves the substitution of one type of Work and/or Product for another the actual cost of the change, shall be the net difference in the actual cost without any entitlement to Overhead and profit."

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 Consultant will 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.

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. PERSONNEL

- 17.1 Superintendent: The Contractor shall employ a competent senior representative at the Place of Work (the "Superintendent") who shall have the responsibility to ensure that the Work is performed in compliance with the Contract Documents. The Contractor shall also employ necessary assistants for the Superintendent and the Superintendent and assistants shall be in attendance at the Place of Work while Work is being performed.
- 17.2 The Superintendent shall represent the Contractor at the Place of Work and instruction given to the Superintendent by the Consultant shall be held to have been given to the Contractor.
- 17.3 If the competence or performance of the Superintendent is not satisfactory to the Consultant then, on written request from the Consultant, the Contractor shall provide a

satisfactory replacement. The Contractor shall not change the Superintendent without the consent of the Consultant, such consent not to be unreasonably withheld.

- 17.4 Workers: The Contractor shall maintain good order and discipline among the Contractor's employees and the subcontractors engaged in the Work. The Contractor shall not employ, or permit subcontractors to employ, workers who are not skilled in the assigned task. The Contractor shall employ sufficient workers to perform the Work in compliance with the Construction Schedule.

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 Consultant 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 IRC Building Sciences Group Inc., Telephone: 604-295-8070 Business Fax: 604-279-9644 E-mail: dwells@ircgroup.com, represented by Doug Wells, Roofing Design Manager 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 the supply of the Goods and Services. 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 will have the right to withhold payment under this Contract until the Workers' Compensation Board premiums, assessments or penalties in respect of the Goods and Services have been paid in full.

23.2 The Contractor will 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 The Contractor agrees that it is the prime contractor for the Services as defined in the *Workers Compensation Act*. The Contractor will have a safety program in place that meets the requirements of the Workers' Compensation Board Occupational Health and Safety Regulation and the *Workers Compensation Act*. As prime contractor, the Contractor will be responsible for appointing a qualified coordinator for insuring the health and safety activities for the location of the Services. That person will be the person so identified in Schedule B of this Contract, and the Contractor will advise the City immediately in writing if the name or contact number of the qualified coordinator changes.
- 23.4 Without limiting the generality of any other indemnities granted by the Contractor in this Contract, the Contractor shall indemnify and save harmless the Indemnitees from and against all claims, demands, causes of action, suits, losses, damages, costs, liabilities, expenses, judgements, penalties and proceedings (including all actual legal costs) which any of the Indemnitees incur, suffer or are put to 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.
- 23.5 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 the *Workers Compensations Act* and Regulations pursuant thereto.
- 23.6 The City may, on twenty-four (24) hours written notice to the Contractor, install devices or rectify any conditions creating an immediate hazard existing that would be likely to result in injury to any person. However, in no case will the City be responsible to ascertaining or discovering, through inspections or review of the operations of the Contractor or otherwise, any deficiency or immediate hazard.
- 23.7 The Contractor understands and undertakes to comply with all 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 and any future MSDS updates will 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;
- (h) the insurance shall include as an insured, each contractor and subcontractor, project manager, architect and engineer who is engaged in the Work; and
- (i) 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. DEFECTIVE 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 Consultant, 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 Contract or related to this Contract ("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 should 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 Department
Facilities Division
13450 – 104 Avenue
Surrey, BC V3T 1V8

Attention: Clayton Welch
Project Coordinator
Business Email: CJWelch@surrey.ca
Business Fax: [Insert]
Business Email: [Insert]

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

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

Business Fax: <<Insert>>
Business Email: <<Insert>>

(c) The Consultant (Payment Certifier): IRC Building Sciences Group Inc.
250 – 21900 Westminster Hwy.
Richmond, BC V6V 0A8

Attention: Doug Wells
Roofing Design Manager

Business Fax: 604-279-9644
Business Email: 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. EXTRA WORK

- 33.1 The City may invite the Contractor to perform Extra Work as part of this Contract by issuing a Contemplated Change Order for the Extra Work.
- 33.2 It is a condition of a Contract that the City is not obligated at any time to make a request to the Contractor to perform Extra Work. The City reserves the right to retain the services of other independent contractor(s) or utilize its own employees to perform any Extra Work that is required to be performed and the Contractor and its subcontractors, if any, shall cooperate fully with other independent contractor(s) retained by the City to perform and/or complete any Extra Work and shall so carry on their work that other cooperating contractors shall not be hindered, delayed, or interfered with in the progress of their work, and so that all of such work shall be finished and complete of its kind.

- 33.3 The Contractor is under no obligation to accept an invitation to perform Extra Work and the City is under no obligation to offer work that might be undertaken by the Contractor as Extra Work.
- 33.4 If the City issues a Contemplated Change Order for Extra Work, the Contractor shall promptly either decline the opportunity to perform the Extra Work or respond with a Quotation.
- 33.5 The City is under no obligation to accept the Contractor's Quotation for Extra Work and may elect to have the Extra Work performed by others.
- 33.6 In no event shall the Contractor proceed with any work that the Contractor intends or expects to be treated as Extra Work without first receiving a written Change Order approving the work as Extra Work.

34. LIQUIDATED DAMAGES FOR LATE COMPLETION

- 34.1 If the Contractor fails to meet the milestone date for Substantial Performance as set out in this Contract as may be adjusted pursuant to the provisions of the Contract Documents, then the City may deduct from any monies owing to the Contractor for the Work:
- (a) as a genuine pre-estimate of the City's increased costs for the Consultant and the City's own staff caused by such delay an amount of \$250.00 per day or pro rata portion for each calendar day that actual substantial performance is achieved after the Substantial Performance milestone date; plus
 - (b) all direct out-of-pocket costs, such as costs for safety, security, or equipment rental, reasonably incurred by the City as a direct result of such delay.
- 34.2 If the monies owing to the Contractor are less than the total amount owing by the Contractor to the City under (a) and (b) above then any shortfall shall immediately, upon written notice from the City, and upon Substantial Performance, be due and owing by the Contractor to the City.

35. NON ROAD DIESEL ENGINE EMISSION REGULATION (AS APPLICABLE)

- 35.1 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.

36. GENERAL

- 36.1 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.
- 36.2 All schedules and appendices attached to the Contract will be read and construed as forming part of the Contract.
- 36.3 The Contract will be interpreted in accordance with the laws of the Province of British Columbia.
- 36.4 The headings are included in the Contract for convenience only and will not be referred to in interpreting the Contract.
- 36.5 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.
- 36.6 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 shall furnish everything needed to perform all of the requirements of this Contract including without limitation any and all material required but not supplied by the City, all labour, transportation, General Conditions and services required to faithfully perform and provide the Work at the Place of Work as required for and to the satisfaction of the City.

The general components of Work includes, but not limited to, provide a general breakdown of the work components. [e.g., the removal and disposal of the existing roof membrane system and the installation of a new SBS roofing membrane system including all new drains, flashings, etc. as identified in the attached specification.

Place of Work location is 10662 - 148 Avenue, Surrey, BC.

The Contractor is to furnish certificates confirming Work conforms to requirements of authorities having jurisdiction.

The detailed scope of work is as described on the Drawings (as applicable), 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.

S.P.3 Consultant

The Consultant, IRC Building Sciences Group Inc. Telephone: 604-295-8070 Business Fax 604-279-9644 E-mail: dwells@ircgroup.com, represented by Doug Wells, Roofing Design Manager will be the City's representative during the performance of the Work until the Work is complete. The Consultant will advise and consult with the City. The City's instruction(s) to the Contractor may be forwarded through the Consultant.

The Consultant may periodically visit the Work site(s) 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 accordance with the Contract Documents.

S.P.4 Payment Certifier

The Payment Certifier is IRC Building Sciences Group Inc., Telephone: 604-295-8070 Business Fax: 604-279-9644 E-mail: dwells@ircgroup.com, represented by Doug Wells, Roofing Design Manager.

S.P.5 Project Manager

The Project Manager is City of Surrey, Planning & Development Department, Facilities Division , 13450 – 104 Avenue, Surrey, B.C., Canada, V3T 1V8 Telephone: 604-592-7063 Fax: 604-599-8794 E-mail: CJWelch@surrey.ca represented by Clayton Welch, Project Coordinator.

S.P.6 Schedule of Prices

This Contract is a combination of unit prices and lump sums.

Any Work item that is not implicitly described, or inferred, as being included in any regular item or optional item in the Schedule of Prices shall be included in the lump sum price proposed for 'Miscellaneous Work'.

For unit price items, the number of units for each item (i.e., quantities) as listed in the Schedule of Prices has been estimated. Actual quantities will vary. Payment will be made based on the measurement of the actual quantity of Work incorporated into the Contract.

The unit prices for each item will be applicable regardless of the variation in the actual quantity as compared to the estimated quantity. No adjustment to the unit price will be considered as a result of such variation.

S.P.7 Coordination

The Contractor will be responsible for coordinating with other contractors City forces, outside agencies and others as required throughout the Contract. While it is not an all-inclusive list of potential coordination requirements, the following list of known activities that the Contractor should be aware of 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 <<insert date mm/dd/year>>. The Contractor will schedule the Work accordingly.

S.P.9 Quality Assurance

The Work shall be performed by a Contractor experienced in Flat Roofing 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 Management

The Contractor shall comply with all the requirements of applicable laws, rules, regulations, codes and orders of the City and other appropriate authorities concerned with work on streets or highways and shall post proper notices and/or signals, and provide necessary barriers, guards, lights, flagmen or watchmen as may be necessary for proper maintenance of traffic and protection of persons and property from injury or damage. All costs involved in respect to the above requirements will be deemed to be included in the Total Quotation Price.

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) Should 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 should accompany equipment delivered. Electrical, mechanical, and plumbing booklets should be provided to the City, as per the specifications.

All manual(s) should 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 Holly Pool, 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 to dispose of all debris, trash and unsuitable materials collected under this Contract off site. 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 is 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 and the Consultant, in writing. Thereupon, the Consultant will perform a final inspection of the Work. If the Consultant 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.

END OF PAGE

SCHEDULE B - APPENDIX 2
SUPPLEMENTARY SPECIFICATIONS – (PROJECT)

SPECIFICATION DOCUMENTS

Project: 2018 Roof Replacement Program At
HOLLY OUTDOOR POOL
10662-148 Street
Surrey, BC, V3R 3X6

Prepared For
CITY OF SURREY
6651 148th Street
Surrey, BC, V3S 3C7

Attention: Farhad Alizadeh

W.O. Number: VR18-110SP
IRC Number: IRC-21089

IRC Building Sciences Group
250 – 21900 Westminster Hwy
Richmond, BC, V6V 0A8

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Gravity Air Vent Detail	VSMM024
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B-Vent Detail	VSMM026

END OF SECTION - 00 01 15

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2018 Roof Replacement Program At:

HOLLY OUTDOOR POOL

10662-148 Street
Surrey, BC, V3R 3X6



Photo 1: Elevation looking north.



Photo 2: Elevation looking south.



Photo 3: Main roof looking northeast.



Photo 4: Main roof looking west.



Photo 5: Protective screen installed due to past vandalism. Anticipate re-use.



Photo 6: Light post installed in a gum pocket. Anticipate correction and installation of liquid applied membrane solution.



Photo 7: Cut test photo showing 2 ply SBS, 7/16" fibreboard, and kraft laminate vapour retarder.



Photo 8: View of exterior fascia. Existing fascia is to be retained, with new metal cap flashings on the roof only. Existing block wall cap flashings are also to be retained.

END OF SECTION - 00 02 00

PART 1 - GENERAL

1.1 DESCRIPTION

- .1 This Section is intended to compliment Owner issued Supplementary Conditions, and as such is to be read and interpreted in conjunction with Owner supplied documents. In case of conflict between these documents and City of Surrey prepared documents, the more stringent condition shall apply.

1.2 RELATED SECTIONS

- .1 Section 01 35 23 - Health and Safety

1.3 DEFINITIONS

- .1 "Contract" means Contract Documents referred to in Articles of Agreement.
- .2 "Contractor", or pronoun in place thereof, means individual, group, corporation identified in Agreement that has undertaken to perform Work.
- .3 "Day" means calendar day. "Working day" means days other than Saturdays, Sundays, and holidays which are observed by construction industry at Place of Work.
- .4 "Consultant" means IRC Building Sciences Group, entity engaged by Owner to prepare Specification Documents and provide administration of Contract.
- .5 "Other Contractor" means any person or firm or corporation employed by or having a Contract directly or indirectly with Owner other than through Contractor.
- .6 "Owner" means City of Surrey, person or entity identified as such in Agreement.
- .7 "Owner's Representative" means authorized individual or group, other than Consultant, acting on behalf of Owner.
- .8 "Place of Work" means designated location or site where contracted work is to be performed.
- .9 "Sub-Contractor" includes any person, firm, or corporation having a contract for execution of a part or parts of Work included in Contract, or a person, firm, or corporation furnishing material called for in Contract and worked to a special design according to Contract Documents but does not include one who merely furnishes materials not so worked.
- .10 "Work" includes, subject only to any express stipulations in Contract to contrary, everything that is necessary to be done, furnished, or delivered by Contractor and by those for whom he is responsible, to completely perform Work of Contract.

1.4 DOCUMENTS REQUIRED

- .1 Maintain at job site, one copy of following:
 - .1 Specifications and Drawings,
 - .2 Addenda,
 - .3 Approved Work Schedule,
 - .4 Applicable Construction Permits,
 - .5 Change Orders and Change Directives,

- .6 Supplementary Instructions or Field Orders,
- .7 Other modifications to Contract,
- .8 Field Observations and Testing Reports.

1.5 OWNERSHIP OF DRAWINGS AND MODELS

- .1 All Drawings, Specifications and copies thereof and all models furnished by Consultant are and to remain property of Consultant, and are not to be used on other work. If Consultant so requests, all such Drawings, Specifications and models, except for signed Contract set of Drawings and Specifications, to be returned upon completion of work.

1.6 FEES, TAXES, PERMITS AND CERTIFICATES

- .1 Pay applicable Federal, Provincial, and Municipal taxes.
- .2 Provide authorities having jurisdiction with information when and as requested.
- .3 Pay fees and obtain certificates and permits including building permit if required.
- .4 Furnish certificates and permits when requested.

1.7 SAMPLES

- .1 Submit samples for review, in duplicate unless specified otherwise, as requested in respective specification Sections.
- .2 Identify name of manufacturer and product.
- .3 Deliver samples pre-paid to Consultant's business address.
- .4 Notify Consultant in writing at time of submission of deviations in samples from requirements set forth in Contract Documents.
- .5 Adjustments of samples made by Consultant are not intended to change Contract Price or Schedule. If adjustments affect value of work, state in writing to Consultant prior to proceeding with performance of work.
- .6 Make changes in and to samples as requested by Consultant, consistent with Contract Documents.
- .7 Installed work to match reviewed and approved samples.

1.8 WORK SCHEDULE

- .1 Provide initial schedule within seven (7) working days after Award of Contract, unless specified otherwise, showing anticipated progress stages and final completion of work.
- .2 Interim review of work progress based on work schedule will be conducted as decided by Consultant and schedule updated by Contractor in conjunction with and to approval of Consultant.
- .3 Coordinate all schedules with Owner's Representative and/or Consultant to suit Owner's occupancy and usage requirements.

1.9 WORKERS' COMPENSATION INSURANCE

- .1 Provide evidence of compliance with requirements of Province for Place of Work regarding Workers' Compensation Insurance including payments due thereunder, prior to commencing Work and prior to receiving payment on Substantial and Total Performance of Work.
- .2 Provide evidence of compliance and subcontractors' compliance, at any time during term of Contract, when requested by Owner or Consultant.

1.10 CONTRACTOR'S USE OF SITE

- .1 This is an occupied site and normal operations must be maintained during performance of work. Take proper care to avoid unnecessary noise, or obstruction in corridors, walkways, sidewalks, and roadways. Do not interfere with use or safe passage to and from building and adjacent public sidewalks and roads. Do not unreasonably encumber site with materials or equipment. Where excessive noise or obstruction is in certain instances unavoidable, advise Owner Representative ahead of time and make suitable arrangements..
- .2 Hours of Work:
 - .1 Perform Work between 7:00 AM and 6:00 PM, Monday through Friday, unless otherwise approved by Owner.
 - .2 Follow municipal or provincial bylaws.
 - .3 Working times must be coordinated with Owner's Representative prior to commencement of work.
- .3 Designated Parking & Office:
 - .1 A site office may be located on site in area designated by the Owner's Representative. Decision to locate a site office on site is to be pre-arranged prior to RFQ closing.
 - .2 Limited parking may be provided on site, unless specified otherwise, at a location acceptable to Owner's Representative. Provide and pay for additional parking, if required.
- .4 Access:
 - .1 Access and egress from work site to be as per prescribed and designated routes only. Provide and arrange for traffic control where necessary for delivery of materials, removal of garbage, etc. as required by Owner's Representative and as required by laws, ordinances, rules and regulations relating to Place of Work.
 - .2 Ensure that privileges presently accruing to adjacent properties are maintained.
 - .3 Do not transport materials through building without prior approval from Owner's Representative. Access to building and elevators, storage space for material and tools will be as specified by Owner's Representative.
- .5 Storage:
 - .1 Use of site for storage of materials and equipment will be at a location acceptable to Owner's Representative. Location of site storage provision for removal of debris must be coordinated with Owner and Consultant in advance. Obtain and pay for use of additional storage of work areas needed for operations.
 - .2 Do not store materials or use trucks, cranes, hoists or other equipment in a manner which would load existing building structure beyond its design capacity.

- .3 Provide adequate weather tight sheds or trailers for storage of materials, tools, and equipment which are subject to damage by weather.
- .4 Move stored products or equipment which interfere with operations of Owner or other Contractors.
- .5 Contractor to prepare and provide a Site Logistics Plan for review by the Owner, indicating project execution goals, location of bins, storage, etc.
- .6 Sanitary Facilities:
 - .1 Provide on-site washroom facilities on ground level only. Contractor will not have access to building washroom facilities.
 - .2 Maintain Contractor's facilities in good and clean working condition.
 - .3 Workers will not be permitted to use any other sanitary facilities, intended for use of public or building personnel.
- .7 Signage:
 - .1 No signs or advertisements other than warning signs are permitted on site unless approved by Owner's Representative or Consultant.
 - .2 Provide sufficient signage to indicate safe access and egress routes around or through the Work, and to ensure public safety.

1.11 COORDINATION AND COOPERATION

- .1 Coordinate all construction work with Owner's Representative and Consultant to obtain access to work site areas.
- .2 Coordinate all construction work with Sub-Contractors when work is related.
- .3 Adhere to approved project schedule as closely as possible so that proper pre-arranged access can be arranged.
- .4 Execute work with minimum disturbance to occupants, public and normal use of site and building.
- .5 Maintain access to building and exits.
- .6 Where security has been reduced by work of contract, provide temporary means to maintain security.

1.12 CODES AND STANDARDS

- .1 Conform to all rules and regulations of all Authorities having jurisdiction at Place of Work.
 - .1 Federal regulations, latest edition including all amendments up to project date.
 - .2 Provincial regulations, latest edition including all amendments up to project date.
 - .3 Municipal regulations, latest edition including all amendments up to project date.
 - .4 WorkSafe BC Workers Compensation Act, OHS Regulations, Policies, Guidelines, WCB Standards, and Other OHS Legislation.

1.13 PROJECT MEETINGS

- .1 Hold project meetings as requested by Owner's Representative and/or Consultant.
- .2 Notify all concerned parties of meetings.
- .3 Record meetings and distribute to all parties within 3 days of meeting. Include in minutes all significant proceedings, decisions and identify action by appropriate party.

1.14 SETTING OUT OF WORK

- .1 Assume full responsibility for and execute complete layout of work to locations, lines and elevations indicated.
- .2 Provide devices needed to lay out and construct work.
- .3 Supply such devices as straight edges and templates required to facilitate Consultant's observation of work.

1.15 CUTTING, FITTING AND PATCHING

- .1 Execute cutting, fitting and patching required to make work fit properly.
- .2 Where new work connects with existing and where existing work is altered, cut, patch and make good to match existing work.
- .3 Obtain Consultant's approval before cutting, boring or sleeving load-bearing members.
- .4 Make cuts with clean, true, smooth edges. Make patches inconspicuous in final assembly.
- .5 Fit work airtight to pipes, sleeves, ducts, and conduits.

1.16 EXISTING SERVICES

- .1 Where work involves breaking into or connecting to existing services, carry out work at times directed by governing authorities, with minimum of disturbance to building operations, pedestrian and vehicular traffic.
- .2 Before commencing work, establish location and extent of service lines in area of work and notify Consultant of findings.
- .3 Provide 48 hours' notice and submit schedule to, and obtain approval from, Owner's Representative and Consultant for any shut-down or closure of active service or facility. Adhere to approved schedule and provide notice to affected parties.
- .4 Where unknown services are encountered, immediately advise Owner's Representative and Consultant and confirm findings in writing.
- .5 Record locations of maintained, re-routed and abandoned service lines.

1.17 PERFORMANCE OF WORK

- .1 Perform Work with least possible interference or disturbance to occupants, public and normal use of premises, roadways, parking areas, sidewalks, alleys, or passageways. Arrange with Consultant to facilitate execution of work. All egress doors providing access to work areas to be controlled. This is to be coordinated with Owner's Representative.
- .2 Provide all protection necessary or as required by local by-laws including but not limited to: hoarding, covered walkways, guard rails, barriers, night lights, sidewalk or curb protection and

- warning notices in locations where renovation and alteration work is adjacent to areas used by building occupants or public.
- .3 Take all necessary precautions to keep dust, dirt, and debris to an acceptable level as directed by Owner's Representative and Consultant. Comply with all laws, ordinances, rules and regulations relating to work in connection with above.
 - .4 Where work is performed adjacent to air intakes, Owner's Representative and Consultant must be notified so that appropriate measures can be taken.
 - .5 Protect exterior surfaces of building and grounds from debris and damage.
 - .6 Protect adjacent property and buildings against damage which may occur as a result of work. Make good, to satisfaction of Owner's Representative and Consultant, any damage resulting from work of this Contract.

1.18 SHOP DRAWINGS

- .1 'Shop drawings' means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of work.
- .2 Shop drawings should indicate method of construction, method of anchorage, fastening, sealing, as well as material type, thickness, finish and other pertinent data.
- .3 Cross-reference shop drawing information to applicable portions of Contract Documents.
- .4 Adjustments made on shop drawings by Consultant are not intended to change Contract Price. If adjustments affect value of work, state such in writing to Consultant prior to proceeding with work.
- .5 Make changes in shop drawings as Consultant may require consistent with Contract Documents. When re-submitting, notify Consultant in writing of any revisions other than those requested.
- .6 Submit three (3), unless otherwise specified, copies of shop drawings for each requirement requested in specification Sections and as Consultant may reasonably request.
- .7 Submit three (3), unless otherwise specified, copies of product data sheets or brochures for requirements requested in specification Sections and as Consultant may reasonably request where shop drawings will not be prepared due to standardized manufacture of product.
- .8 If upon review by Consultant, no errors or omissions are discovered or if only minor corrections are made, copy to be returned and fabrication and installation work may proceed. If shop drawings are rejected, noted copy will be returned and re-submission of corrected shop drawings, through procedures indicated above, to be performed before fabrication and installation work may proceed.

1.19 ADDITIONAL DRAWINGS

- .1 Consultant may furnish additional drawings to assist proper execution of work. These drawings to be issued for clarification only. Such drawings to have same meaning and intent as if they were included with plans referred to in Contract documents.
- .2 Perform Work in accordance with such additional instructions. Contractor to do no additional work without written instructions from Consultant.

1.20 WASTE DISPOSAL

- .1 Provide for storage and removal of garbage as a result of work and obtain approval of storage location(s) from Owner's Representative and Consultant prior to commencement of work.

- .2 Disposal of debris and garbage from the roof to be on a daily basis with minimum disturbance to Owner and occupants, unless stockpiling is specifically agreed upon.
- .3 Recycling of waste materials when possible and prudent must be arranged by the Contractor, and meet municipal regulations.

1.21 QUALITY CONTROL

- .1 IRC has been retained to provide third party Quality Assurance Observations (QAO) for the roofing installation work. The fee is based on the roof installation work to be performed in accordance with the Contract Documents and in a timely fashion. Additional QAO services may be required as a result of the Contractor's performance and will be billed to the Contractor at a rate of \$550.00 per QAO site visit. Additional site visits will apply in the following circumstances:
 - .1 Significant portions of the work are rejected and require additional review for the remediation of the defect. Significant includes: areas larger than 1,000 SF, work valued at more than \$10,000.00, work requiring more than 3 days to correct.
 - .2 Insufficient work force is allocated to the project resulting in the work duration exceeding the Contract Schedule.
 - .3 Deficiencies are identified during the Final QAO site visit, resulting in the requirement of one or more Post Final QAO site visits. Post Finals will be billed to the Roofing Contractor at a rate of \$750.00.
 - .4 Leaks are reported during the roofing work requiring IRC to attend the site to document the leak location(s) and leak related damages.
 - .5 The roof assembly is not maintained water tight during construction and becomes contaminated with moisture, requiring IRC to attend the site to map out the areas of contamination that will need to be remediated.
 - .6 Failure of the Contractor to advise IRC of the ongoing work schedule so that portions of work are installed without our knowledge and inhibiting our ability to schedule QAO for this area and necessitating extra visits with the Contractor to perform exploratory work to verify what was installed.
 - .7 Failure of a mock-up installation which requires a dedicated visit for second mock-up review.
- .2 The fees for the additional QAO site visits will be billed directly to the Contractor unless indicated elsewhere in the Contract. Alternatively and if agreed to upon all parties, additional QAO site visits will be billed to the Owner and charged back to the Contractor via Change Order or Setoff to the Contract.
- .3 Provide Consultant with date each phase of work will begin, 48 hours before commencing work.
- .4 Copies of observation and testing reports to be issued to Contractor and Owner.
- .5 Contractor to cooperate with Consultant to facilitate observation and documentation of existing substrate and details throughout demolition work.
 - .1 Correct defects and irregularities of performed work at no additional cost to Owner.
- .6 When initial tests and observations reveal work not to contract requirements, Contractor to pay for additional tests and observations required by Consultant for correction of work.

- .7 It will not be the responsibility of the Consultant, nor will he have control of construction means, methods, techniques, procedures, safety precautions and programs required for the work in accordance with applicable construction legislation, regulations, or general construction practice. Nor will it be the responsibility of the Consultant for acts of omissions of the Contractor, his Sub-Contractors, employees or other persons performing the work.

1.22 EQUIPMENT AND HOISTING

- .1 Provide all required hoisting equipment for removal of debris and for movement and placing of materials and equipment during construction. Debris chutes to be totally enclosed and inclined, with watering down facilities as necessary to control dust, fire hazards, and nuisance factors. Exercise extreme care in disposal of wash water.
- .2 Any damage caused by hoisting equipment or operator to be made good to satisfaction of Owner's Representative and Consultant.
- .3 Provide and maintain temporary ladders required to perform work. Ladders to be strongly constructed and to comply with all requirements of safety authorities having jurisdiction over work. All ladders to be secured and used only by methods approved by Authorities.
- .4 Provide all required scaffolding necessary to perform work. Erect scaffolding independent of walls. Construct, maintain and use scaffolding in accordance with CAN/CSA-S269.2M, Access Scaffolding for Construction Purposes.

1.23 TEMPORARY FACILITIES AND SERVICES

- .1 Provide and maintain temporary facilities to carry out work.
- .2 Provide and maintain sanitary facilities to be used by Contractor's forces.
- .3 Remove temporary facilities and services on completion of work.

1.24 LOCATION OF EQUIPMENT AND FIXTURES

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

1.25 FIRE PREVENTION

- .1 No open burning to be permitted within any construction at site.
- .2 Provide and maintain temporary fire protection equipment during performance of work required by insurance companies having jurisdiction and governing codes, regulations and bylaws. Provide a 20 lb. dry chemical fire extinguisher fully charged and in operable condition at every location where open flames are used.
- .3 Keep site free of waste materials, rubbish and debris.

1.26 WELDING AND CUTTING

- .1 Safety Provisions
 - .1 Ensure compliance with following regulations regarding welding and cutting operations and other operations generating flames, sparks, smoke, and heat;
- .2 Safety Procedures by Contractor
 - .1 Contactor shall establish Safety Procedures by task, and document such procedures to meet provincial regulations.

1.27 SMOKING ENVIRONMENT

- .1 Comply with smoking restrictions at work site. Smoking and / or vaping is defined as including cigarettes, cigars, pipes, e-cigarettes and other equipment used to smoke or burn tobacco, cannabis, and other plant material.

1.28 OCCUPATIONAL HEALTH AND SAFETY

- .1 Conform to safe work practices in accordance with regulations and authorities having jurisdiction.
- .2 Promptly report to Owner and Consultant all accidents or if any claim is made against Contractor or Subcontractor on account of accident.
- .3 Provide at site, equipment to supply first aid.
- .4 Enforce proper work methods and act immediately on directions regarding safety and work practices given by authorities having jurisdiction or Owner, at no additional cost to Owner.
- .5 Failure to comply with verbal or written instructions or orders from Ministry of Labour inspector or other authorities as well as Owner or Consultant regarding safe work practices or provision of specified requirements under Act to be considered non-compliance with Contract.
- .6 Maintain on-site a copy of latest edition of Occupational Health and Safety Act and Regulations for Construction Projects.
- .7 Ensure that all personnel are adequately equipped to comply with safety regulations and that sufficient safety equipment is available.

1.29 TEMPORARY POWER AND WATER

- .1 Coordinate with Consultant and Owner's Representative for use of temporary power and water supply.
- .2 If available, Owner will allow usage of typical site utilities such as electrical services and hose bibs.
- .3 Provide any necessary special wiring for lights, equipment, etc.
- .4 For non-typical uses, provide temporary power distribution wiring to comply with provincial Hydro Electrical Safety Code. Obtain inspection certificates for temporary electrical work from local authorities.

1.30 WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS)

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

1.31 CLEANING

- .1 Maintain project free of accumulated waste and rubbish. Disposal of debris and garbage to be on a per shift basis with minimum disturbance to Owner and tenants. Under no circumstances shall debris be allowed to accumulate on-site.
- .2 Final cleaning:
 - .1 Remove temporary protection.
 - .2 Remove dust, dirt and foreign matter from surfaces.
 - .3 Broom clean paved exterior surfaces.
- .3 Contractor's parking areas, storage areas, and access routes between work areas and aforementioned areas to be as defined by Owner's Representative and be strictly adhered to.
- .4 At end of project, landscaping to be repaired to match pre-existing conditions to satisfaction of Owner's Representative and Consultant.

1.32 CONTRACT CLOSE-OUT

- .1 Expedite and complete deficiencies and defects identified by Consultant.
- .2 Submit required documentation such as statutory declarations, Workers' Compensation Certificates, warranties, certificates of approval or acceptance from regulating bodies.
- .3 Review observation and testing reports to verify conformance to intent of documents and that changes, repairs or replacements have been completed.
- .4 Provide on-going review, observation, and attendance to building, call-back, maintenance and repair problems during Warranty periods.
- .5 Provide warranties and bonds fully executed and notarized.
- .6 Execute transition of Performance of Labour and Materials Payment Bond to warranty period requirements.
- .7 Collect and assemble documents executed by Subcontractors, suppliers and manufacturers.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION - 01 00 00

PART 1 - GENERAL

1.1 DESCRIPTION

- .1 Roofing Contractor to provide all labour, equipment, and materials necessary to perform to completion Work as described in these Contract Documents for:
 - .1 2018 Roof Replacement Program on designated roof areas of:
Holly Outdoor Pool, located at 10662-148 Street, Surrey, BC, V3R 3X6.
- .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, or as agreed to with the Owner.
- .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 RFQ 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 RFQ 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 RFQ 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 RFQ submission to be based on products, equipment, and/or suppliers named and identified as approved or accepted in technical specifications and drawings.
 - .1 RFQ 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 RFQ 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 RFQ Price.

1.4 RFQ PRICING

- .1 Provide a breakdown of Stipulated Lump Sum Price as itemized and indicated on RFQ Form.
 - .1 Roof Areas 1.1: Price to remove the existing 2 ply modified bitumen membrane system on a wood deck, and install a new replacement 2 ply modified bitumen membrane system in accordance with Section 07 52 00 – SBS Modified Bituminous Membrane Roofing.
- .2 Provide 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. As indicated on RFQ Form.
 - .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 Replacement of Wood Decking: Price to supply and install new decking boards (4'x8') to overlay damaged or deteriorated roof deck. Replacement to be endorsed by QA Observer.
- .3 Provide Separate Prices as itemized and indicated on RFQ Form.
 - .1 Provide to the Owner, the RGC RoofStar Ten (10) Year Guarantee. The cost of the RCABC Guarantee Administration Fees and Milestone Observation Reviews only are to be provided.

1.5 OWNER OCCUPANCY

- .1 Owner will occupy premises during entire construction period for execution of normal operations. Anticipate the adjacent Outdoor Pool will be closed.
- .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 Perform Work between hours of 07:00 to 18:00 hours, Monday through Friday. Consult with Client/Building Owner for special access times.
- .2 Temporary Barriers, enclosures and signage will be highly enforced given use of property.
- .3 Contractor to ensure safety and proper execution of public routing; ensuring temporary access to fire exits if and when they are affected as part of Work.
- .4 Obtain Construction/Building Permit and sidewalk/roadway occupation permits as required by local municipality.
- .5 Determine nature and extent of all site services above and below grade prior to commencement of Work.

- .6 Coordination of trades will be responsibility of Contractor to ensure work is completed as soon as possible. Provide weather protection and heating as required to perform Work if required and as specified.
- .7 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.
- .8 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.
- .9 Sanitary Facilities
 - .1 Provide on-site washroom facilities on ground level only, secured in a locked compound. The Contractor will not have access to the building washrooms.
 - .2 Maintain facilities in clean condition.
 - .3 Workers will not be permitted to use any other sanitary facilities, intended for the use of public or building personnel.
- .10 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.
- .11 Provide temporary support to existing structural and cladding components during performance of work if required.
- .12 Install temporary protection for all materials and building components, which have been exposed during demolition/removals as specified.
- .13 Dispose of all materials unable or unsuitable for recycling at landfill site authorized by authorities having jurisdiction.
- .14 Pay for any additional testing and observations required by Observer for correction of Work, without additional cost to Owner, when initial tests and observations reveal work failing to meet contract requirements and when construction extends beyond the schedule submitted by the contractor.

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 MEMBRANE ROOFING

- .1 Base RFQ on Roof Areas 1.1: Remove existing system components, projection and perimeter flashings, and old appurtenances down to existing deck in preparation for installation of a new 2

- ply modified bitumen membrane system in accordance with Section 07 52 00, work to be installed to complete base sheet daily.
- .1 Review existing roof deck with Consultant to identify damaged areas requiring repair or replacement. Consultant to be notified 48 hours prior to roof deck examination.
 - .1 Install new compatible deck materials where required to repair and restore existing deck.
 - .2 Install new 1 ply kraft laminate vapour retarder, in adhesive.
 - .3 Install new tapered glass faced polyisocyanurate insulation package as per Roof Plan, and as per manufacturer recommended shop drawings, mechanically fastened.
 - .4 Install 1 layer of .25" siliconized gypsum overlay board, mechanically attached.
 - .5 Install 1 ply modified bitumen base sheet and flashings, self-adhered.
 - .6 Install 1 ply, modified bitumen granulated cap sheet and flashings, torch applied.
 - .7 Install new prefinished metal flashings, hook strips, and trim at all perimeter and projection locations where indicated on drawings and detailed in related technical sections.
- .2 Roofing Contractor is to confirm whether Separate Prices, modifying the assemblies above, have been accepted. Modifications noted below apply to all Roof Areas, 1.1, and are as follows:

1.10 SCOPE OF WORK: REMOVAL OF HAZARDOUS MATERIALS

- .1 Owner has documentation indicating there is no asbestos present in the tested samples. Documentation will be provided to the successful RFQder for their records and use.

1.11 MISCELLANEOUS

- .1 It shall be the responsibility of the Contractor to verify that all existing conditions and roof system components are accurately reported in these specifications.
- .2 All details specified by this Scope of Work constitute acceptable installations. Any deviation from these specifications must first be approved by the Consultant prior to any installation.
- .3 All reasonable precautionary measures will be undertaken. It shall be the responsibility of the Contractor to ensure minimal dust and debris contamination of the interior and exterior of the work site.
- .4 At the end of each day's work drag a magnetic bar across all work areas to remove all fasteners from the grounds. All loose debris shall be removed from the designated roof areas and disposed of accordingly.
- .5 It shall be the responsibility of the Contractor to arrange and pay for the disconnect and reconnect of all ventilation, mechanical and A/C units as required to execute the Work.
- .6 If the removal of any exhaust vents or equipment results with an opening in the deck that cannot be permanently sealed that day, the Contractor shall be responsible for providing overnight security to the building by a company approved by the Consultant.
- .7 It shall be the responsibility of the Contractor to ensure that no attachments (wiring, lighting, etc.) are attached to the underside of any deck that is to be removed. The contractor shall notify a representative of the Owner, who will then disconnect any such services, if necessary.

- .8 Security fencing shall be provided at all times for equipment and materials at stored at ground level. No materials or equipment shall be left unsecured on the ground. The materials and equipment compound shall be locked when access is not required.
- .9 Cover all roof materials properly with suitable tarps to prevent exposure to moisture and sunlight. Manufacturer's packaging does not constitute adequate tarping and protection. All roof materials are to be elevated on appropriate dunnage.
- .10 Existing grounds shall be restored to original condition upon completion of project by the Contractor to the satisfaction of the Consultant.

1.12 CLEANING

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

1.13 WARRANTY

- .1 Contractor's Workmanship Warranty:
 - .1 Provide Owner with Contractor's two (2) year Warranty for Workmanship and Materials on Contractor's letterhead.
- .2 Manufacturer's System Warranty:
 - .1 Provide a written Ten (10) Year Membrane Manufacturer's No Dollar Limit System Warranty from the date of Approved Final Review.
- .3 Cost of all warranties to be included in RFQ Price.
- .4 Cost of all Field Reviews to be paid by Owner.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION - 01 11 00

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PART 1 - GENERAL

1.1 DESCRIPTION

- .1 This section details procedures to be followed for delivery of Submittals identified and required by other specification sections, consisting of but not limited to:
 - .1 System Letter if required for CSA 123.21-14 Wind Uplift
 - .2 Shop drawings
 - .3 Samples
 - .4 Mock-ups
 - .5 Certificates and transcripts

1.2 GENERAL REQUIREMENTS

- .1 Transmittal for Submissions: Accompany all submittals with transmittal letter containing:
 - .1 Date of transmittal,
 - .2 Sequential number for tracking of each submission,
 - .3 Project title and number,
 - .4 Identification and quantity of each shop drawing, product data sheet, sample, etc,
 - .5 Contractor's business name and address,
 - .6 Name of reviewer for Contractor,
 - .7 Contractor's review stamp: completed, dated, and signed certifying submittal has been reviewed, checked, and approved for compliance with Contract documents.
- .2 Delivery: Direct submittals identified and required by individual technical sections to Consultant for review at following address, unless otherwise directed in writing:
 - .1 Attention: Doug Wells
Office: IRC BUILDING SCIENCES GROUP
Address: 250 – 21900 Westminster Hwy, Richmond, BC, V6V 0A8
Telephone: 604.295.8070
Facsimile: 604.279.9644
Email: dwells@ircgroup.com
 - .2 All deliveries prepaid by Contractor.
- .3 Time and Scheduling:
 - .1 Deliver submittals with reasonable promptness and in orderly sequence to avoid delay in progress of Work.
 - .2 Allow up to ten (10) working days for Consultant's review of each submission.
 - .3 Time for review to begin and be noted upon receipt of submittal by Consultant.
 - .4 No adjustments to Contract Time or Price allowed due to delay in progress of Work caused by review, rejection, and re-submission process.

- .4 Deviations from Contract Requirements: Notify Consultant in writing of any deviations from Contract Document requirements and state reasons for said deviations at time of submission:
 - .1 Contractor is responsible for errors and omissions in submission and is not relieved by Consultant's review.
 - .2 Contractor is responsible for deviations in submission from requirements of Contract Documents and is not relieved by Consultant's review.
- .5 Review Before Delivery: Contractor to:
 - .1 Review each submittal for completeness and compliance with Contract Documents.
 - .2 Ensure that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and coordinated with requirements of Work.
 - .3 Verify co-ordination of field measurements and affected adjacent Work.
- .6 Incomplete Submissions:
 - .1 Entire submission package to be returned to Contractor if deemed incomplete during a preliminary review, for reasons including:
 - .1 Insufficient number of copies provided,
 - .2 Transmittal for submission incomplete, missing, or unsigned,
 - .3 Submittal not stamped, completed, signed, dated, or identified to specific project.
- .7 Re-submissions:
 - .1 Use same procedure indicated here and above for re-submission.
 - .2 Clearly identify each correction or change made to submittal.
 - .3 Use original submittal number with appended suffix at end to indicate revision number.
- .8 Acceptance and Rejection:
 - .1 Where review by Consultant discovers no errors and omissions or only minor corrections, min. two (2) copies to be returned for fabrication and installation of Work to proceed.
 - .1 One copy of accepted submission to be retained by Consultant for project record.
 - .2 If submittals are rejected or require significant modification, noted copies to be returned to Contractor and marked with request for correction and re-submittal.
 - .1 One copy of rejected submission to be retained by Consultant for project record.
 - .3 Re-submit corrected submittals using same procedure indicated above and listed in this section. Include required number of copies for subsequent re-submission.
- .9 Distribution:
 - .1 Proceed with Work affected by submittals only after Consultant's review is complete.
 - .2 Distribute copies of accepted submittals as required. Deliver one copy to Owner or Owner's Representative for project management.
 - .3 Keep one copy of each reviewed submittal on site during performance of Work.

1.3 ACTION SUBMITTALS

- .1 Manufacturer's System Letter:
 - .1 Upon award of the work, and prior to loading, the roofing contractor must provide a System Letter from the membrane manufacturer, which clearly states the appropriate mechanical fastening and / or adhesive fastening patterns for the specified assembly based upon CSA 123.21-14 Wind Uplift testing.
 - .2 System letter shall include reference to the Specified Wind Uplift Pressures stated in the Scope of Work.
 - .3 System Letter shall include a copy of the applicable Roof System Assessment Report of Wind Uplift Resistance (or proprietary equivalent), including specific sizes / gauges / TPI of fasteners, size and shape of insulation or membrane plates, size of adhesive row(s), as applicable to the Scope of Work.
 - .1 Shop drawings of required fastener and plate or adhesive row placement is encouraged from the manufacturer to assist the field forces of the roofing contractor.
 - .4 Work performed prior to receipt of System Letter may be rejected if not compliant with the Design Letter.
- .2 Shop Drawings:
 - .1 Definition: "Shop Drawings" to mean drawings, diagrams, illustrations, schedules, performance charts, brochures and other data to illustrate details of a portion of Work.
 - .2 Number of Copies: Submit three (3) copies of shop drawings for each requirement identified and requested in technical sections, and as many additional copies as Consultant may reasonably request.
 - .1 Where shop drawings will not be prepared due to standardized manufacture of product, submit copies of product data sheets or brochures.
 - .3 Identify and Indicate: Products and materials to be used, methods of construction, attachment or anchorage, erection diagrams, connection diagrams, explanatory notes, and any other information necessary for completion of Work.
 - .1 Where articles or equipment attach to or connect to other articles or equipment, indicate that such items have been coordinated; regardless of Section under which adjacent items to be supplied and installed. Indicate cross references to design drawings and specifications.
 - .4 Drawings and Diagrams:
 - .1 Field Measurements: Note critical dimensions established by field measurement and any relationships to other critical features of Work.
 - .2 Project specific information and dimensions to be drawn accurately to scale.
 - .3 Manufacturer's Standard Drawings: Supplement standard information to provide detail specifically applicable to project. Modify to delete information not applicable to project.

- .4 Measurements and Units: Present shop drawings, product data, samples, and mock-ups in SI Metric units. Where items or information are not produced in SI Metric units, converted values are acceptable.
- .5 Submittals to Include:
 - .1 Date and revision dates,
 - .2 Project title and number,
 - .3 Name and address of Subcontractor, Supplier, and Manufacturer,
 - .4 Contractor's stamp, signed by authorized representative certifying approval of submissions, verification of field measurements, and compliance with Contract Documents,
 - .5 Where required, licensed Engineer's signed and dated stamp or seal, valid for Place of Work,
 - .6 Details for appropriate portions of Work, as applicable including:
 - .1 Fabrication,
 - .2 Dimensioned layouts, including field dimensions and clearances,
 - .3 Setting or erection details,
 - .4 Capacities,
 - .5 Performance characteristics,
 - .6 Standards,
 - .7 Operating weight,
 - .8 Wiring diagrams,
 - .9 Single line and schematic diagrams,
 - .10 Relationship to adjacent work.
- .6 Changes and Adjustments:
 - .1 Make noted changes to shop drawings as Consultant may require, consistent with Contract Documents. When re-submitting notify Consultant in writing of any revisions other than those requested.
 - .2 Adjustments to shop drawings made by Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Consultant prior to proceeding with Work.
- .3 Samples:
 - .1 Number of Copies: Submit duplicate (2) samples for each requirement identified and requested in technical sections, and as many additional sample copies as Consultant may reasonably request.
 - .2 Identify and Indicate: Label sample's source or manufacture, material, size, model number, and intended usage in Work.

- .3 Sample Size:
 - .1 Full size samples, cured and finished, as indicated in technical sections,
 - .2 Physically identical to product proposed for use in Work,
 - .3 Prepared from same materials and methods to be used for installation of Work.
- .4 Mount, display, or otherwise package samples in sufficient way to facilitate review of sample for quality.
- .5 Where colour, pattern, or texture is criterion, submit full range of samples.
- .6 Notify Consultant in writing, at time of submission, of any deviations in samples provided from requirements of Contract Documents.
- .7 Changes and Adjustments:
 - .1 Make noted changes to samples as Consultant may require, consistent with Contract Documents.
 - .2 Adjustments to samples made by Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Consultant prior to proceeding with Work.
- .8 Do not proceed with any Work associated with samples until each has been reviewed and accepted by Consultant.
 - .1 Acceptance of samples to be noted in writing by Consultant.
- .9 At least one of each accepted sample to be returned to Contractor to store on site.
- .10 Reviewed and accepted samples to become standard of workmanship and material referenced for comparison and verification of finished Work.
- .4 Mock-ups:
 - .1 Erect sample mock-ups for each requirement identified and requested in technical sections, and as requested by Consultant.
 - .2 Mock-ups to be full scale and in section sizes as identified in technical section or as requested by Consultant.
 - .3 Coordinate location for onsite installation of mock-ups with Consultant.
 - .4 Deliver one submittal letter noting completion of mock-up installation and requesting on site review by Consultant.
 - .5 Do not proceed with any Work associated with mock-up until it has been reviewed and accepted by Consultant.
 - .1 Acceptance of mock-ups to be noted in writing by Consultant.
 - .6 Accepted mock-up to constitute minimum project standard of workmanship and material to be maintained throughout performance of Work.
 - .7 Maintain and protect mock-ups on site during progress of Work as reference for comparison and verification of finished Work.

- .1 Any Work completed after review not meeting mock-up standard to be removed and reinstalled, at Consultant's discretion, with new materials at no additional cost to Owner.

1.4 INFORMATIONAL SUBMITTALS

- .1 General:
 - .1 Number of Copies: Unless otherwise noted, submit three (3) copies for each requirement identified and requested in technical sections, and as many additional copies as Consultant may reasonably request.
 - .2 Copy of the Scope appropriate Notice of Project (NOP) filed with WorkSafe BC for Place of Work.
 - .3 Insurance and Bonds: True copies of transcripts for specified insurance and bonds:
 - .1 Naming Owner and Consultant as Additional Insured,
 - .2 Indicating amount and type of coverage,
 - .3 Notarized and executed.
 - .4 Manufacturer's Safety Data Sheets (SDS):
 - .1 Published or written information documenting physical and chemical characteristics of products to be installed with handling, safety, and first aid guidelines, including:
 - .1 Manufacturer's name,
 - .2 Product name and model number,
 - .3 Current and latest edition.
 - .5 Trade or Installer Qualifications:
 - .1 Present accreditation cards or tickets, or true copy of, to QA Observer at start of Work and whenever Observer requests, containing:
 - .1 Name and photo of qualifying individual,
 - .2 Identification of training type or certification received,
 - .3 Date achieved or received, or expiry of certification.
 - .6 Applications for Payment:
 - .1 One copy by courier, fax, or email with all required accompanying submittals and documentation in accordance with City of Surrey purchasing instructions. Send additional copies to Diane Schibild of IRC at dschibild@ircgroup.com.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION - 01 33 00

PART 1 - GENERAL

1.1 DESCRIPTION

- .1 This section includes for compliance and submittals required for health and safety during Work.

1.2 REFERENCES

- .1 Federal regulations, latest edition including all amendments up to project date:
 - .1 Fire Commissioners of Canada, FC 301, Standard for Construction Operations.
 - .2 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations.
- .2 Provincial regulations, latest edition including all amendments up to project date:
 - .1 Provincial or National Building Code for Place of Work.
 - .2 WorkSafe BC Workers Compensation Act, OHS Regulations, Policies, Guidelines, WCB Standards, and Other OHS Legislation.

1.3 SUBMITTALS

- .1 Informational Submittals:
 - .1 Copy of the Scope appropriate Notice of Project (NOP) filed with WorkSafe BC for Place of Work.
 - .1 Submit to WSBC in accordance with OH Regulation 20.2 and if appropriate, OH Regulation 20.2.1.
 - .2 Contractor shall have their current Health and Safety Plan for Specific Work Site ready and available for review if required, including, but not limited to:
 - .1 Name and contact info of Contractor's Health and Safety Representative for Work Site; including twenty-four (24) hour emergency contact phone numbers.
 - .2 Phone numbers of local fire, police, and ambulance outside of 911 services.
 - .3 Location of nearest medical facility and level of injury that each can service.
 - .4 Copies of certification for all employees on site of applicable safety training including, but not limited to:
 - .1 Workplace Hazardous Materials Information System (WHMIS).
 - .2 Fall arrest and protection.
 - .3 Suspended Access Equipment
 - .4 License for powder actuated devices.
 - .5 Safety Data Sheets (SDS) of controlled products to be used.
 - .6 On-site Contingency and Emergency Response Plan addressing:
 - .1 Standard procedures to be implemented during emergency situations.

- .2 Preventative planning and protocols to address possible emergency situations. For example, if swing stage work is required, list protocol to be followed if supporting cable breaks.
- .7 Guidelines for handling, storing, and disposing of hazardous materials that may be encountered on site, including measures to prevent damage or injury in case of an accidental spill.
- .3 Incident and accident reports, promptly if and upon occurrence.
- .4 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.

1.4 RESPONSIBILITY

- .1 Contractor responsible for health and safety of persons on Work Site and for protection of persons adjacent to Site to extent that they may be affected by performance of Work.
- .2 Contractor responsible for safety of property and environment on Work Site and for protection of same adjacent to Site to extent that they may be affected by performance of Work.
- .3 Contractor is responsible for health and safety at Work Site and is not relieved by Consultant's review of Health and Safety Plan for Specific Work Site.

1.5 OCCUPATIONAL HEALTH AND SAFETY

- .1 Comply and conform to all health and safety work practices in accordance with regulations and authorities having jurisdiction at Place of Work including, but not limited to:
 - .1 WHMIS awareness and training.
 - .2 Fall-arrest, temporary guardrails, and travel-restraint systems.
 - .3 Eye protection, hardhats, and safety boots.
- .2 Maintain one reference copy on site of Occupational Health and Safety Act and Regulations for Construction Projects for Place of Work, latest edition.
- .3 Ensure that all personnel are adequately equipped to comply with safety regulations and that sufficient safety equipment is available.
- .4 Provide at Work Site sufficient equipment to supply first aid.
- .5 Promptly report to Owner and Consultant all accidents, and any claims made against Contractor or Subcontractor on account of accident.
- .6 Enforce proper work methods and act immediately on directions regarding safety and work practices given by authorities having jurisdiction or by Owner, at no additional cost to Owner.
- .7 Failure of Contractor to comply with verbal or written instructions or orders from the WorkSafe BC Inspector, other authorities, Owner, or Consultant regarding safe work practices or provision of specified requirements under regulations to be considered in Non-Compliance with Contract.
 - .1 Regulatory agencies, Owner, or Consultant may stop Work for failure to rectify non-compliance of health and safety regulations at no cost to the Owner.

1.6 WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS)

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

- .2 Controlled products to be properly labeled.
- .3 Provide proper warning labels and training at workplace.
- .4 Provide copies of safety data sheets (SDS) for any controlled product in workplace.
- .5 Be responsible for all other requirements of regulations as applicable to Employers.
- .6 Contractor shall, before commencing work, provide Owner with a proposal as to how hazardous materials will be stored and dispensed on-site. Specifically outline measures to be taken to prevent damage or injury in event of an accidental spill. Immediately inform Owner and Consultant if any unforeseen or peculiar safety-related factor, hazard, or condition becomes evident during performance of Work.

1.7 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 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: sub-trades, delivery personnel, visitors, consultants, & owner's agents / employees.
- .3 Fire Safety:
 - .1 The Contractor has sole responsibility for fire protection. The Consultant and the Owner assume no role in managing fire safety. Comments and observations may be made by the Consultant regarding fire protection materials, such as fire tape, that are incorporated into the roofing system to help ensure quality relating to the proper use and installation of the materials; this is not to be interpreted as approval of the adequacy for the fire prevention measures that the Contractor is using.
 - .2 The Consultant or Owner may comment verbally, or in writing, on work activities that appear unsafe including fire safety measures, as it is everyone's responsibility on a job site to report potentially unsafe conditions to the Prime Contractor. Such comments are based on isolated observations and are not to be considered safety audits, and are not to be construed as a safety review, which is not part of the professional obligation of the Consultant. The Consultant and Owner are not assuming an expanded role of monitoring site safety by providing any safety related comments, and are intended to show support for the WSBC "Safety is Everyone's Business!" initiative.

- .3 Contractor is responsible at all times for determining and assessing fire risk and for taking all necessary precautions and to employ whatever means and methods that are required to protect the roofing assembly and the building from exposure to flame and the risk of fire.
 - .1 Contractor shall consider all products manufactured or approved by the primary membrane manufacturer, including self-adhering, cold process and liquid, as approved for use in areas they have determined to be flame sensitive as part of their risk assessment process.
 - .2 The Consultant may review and comment on the Contractor's use of these materials to help ensure conformance with the design intent and performance expectations of permanently installed materials.
- .4 Contractor must keep charged and ready fire extinguishers on site at all times, including on roof and at access points to building interior.
- .5 Contractor is responsible to provide a minimum two (2) hour fire watch at completion of each day's activities on all projects implementing use of propane torches and/or burners. Longer fire watches may be required is deemed necessary by WSBC or the Owner, or due to site specific hazards as determined by the Contractor.
- .6 At minimum, a handheld, thermal optic camera suitable for roofing applications and fire alert must be kept on site at all times during torching procedures. Check seams and flashings at regular intervals for flare ups. Check adjacent attic spaces to review the back side of the work area when applicable. This activity is to be recorded by the roofing contractor. If Contractor's requirements are greater, the higher standard shall be followed.
- .4 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 overnight 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.

1.8 WELDING AND CUTTING

- .1 Safety Provisions
 - .1 Ensure compliance with following regulations regarding welding and cutting operations and other operations generating flames, sparks, smoke, and heat;

- .1 Prior to commencement of welding/cutting/torching operations confirm with Consultant or Owner's Representative.
 - .2 Provide as a minimum a Type ABC 20lb, dry chemical fire extinguisher and a small hose at all welding, cutting and torching locations. Ensure a knowledgeable operator trained in its use is provided at all times.
- .2 Safety Procedures by Contractor
- .1 Clear area in immediate vicinity of welding, cutting and torching locations as much as possible of combustible materials and refuse and obstacles to operations.
 - .2 Cover or protected with a non-combustible material all combustible materials which cannot be removed to satisfaction of Consultant and Owner's Representative. Provide shielding to prevent spread of sparks and molten metal from welding, cutting and torching operations.
 - .3 Shield or otherwise protect sprinkler heads, smoke and heat detectors from any welding, cutting and torching operations. If it is likely that shielding will not prevent activation of any of these devices, it to be necessary to have affected fire protection zones(s) isolated for duration of any of operation.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION - 01 35 23

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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 89mm (2" x 4") construction grade lumber framing at 600mm (2') centres and 1200 x 2400 x 13mm (4' x 8' x .5") 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 6000mm (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 2400mm (8') o/c;
 - .2 2"x10' planks across top of frames tight together fastened to scaffolding frames;
 - .3 19 mm (.75") plywood fastened to top of 2"x10' planks;
 - .4 Minimum 12.7 mm (.5") plywood on 38 x 89 mm framing side walls set inside of overhead framing;
 - .5 Hoarding to be constructed to provide unobstructed sight lines both into and out of any enclosed spaces, with 203mm (8") open spaces between sheathing. Netting or mesh strips are to be used to cover the openings.
 - .6 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 25mm (1") rigid insulation;

- .2 12.7 mm (.5") plywood sheathing.

1.7 FALL ARREST

- .1 Conform to requirements of Occupational Health and Safety Act and regulations for Construction projects. Refer to Section 01 35 23 for additional information.
- .2 Any modifications or additions to the building such as guardrails, fall restraint systems, etc. are to be removed from the site at the completion of the work and the work made good.
 - .1 Any inability to restore the work to an as built condition is to be brought to the attention of the Consultant and Owner for review and discussion.

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 day's 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 00 – 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).
 - .5 Canadian Environmental Assessment Act (CEAA).
 - .6 Transportation of Dangerous Goods Act (TDGA).

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.
 - .1 Abatement procedures for Asbestos Containing Materials (ACM) pertinent to successful performance of Work to be paid for by Owner, preapproved by Consultant, as an extra cost to Contract.
 - .2 All ACM work to be in compliance with current provincial asbestos abatement regulations for Place of Work.

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. All metals to be recycled.
- .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.
 - .1 Prior to any digging, ensure BC One is contacted at 1-800-474-6886 and confirm locations of gas lines, electrical service lines, or telephone / data lines. Failure to do so may result in repair costs being applied to the Contractor.

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 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 152mm x 152mm (6" x 6"):
 - .1 Metal Decking: Install 610mm x 610mm (24" x 24") galvanized steel plate, min. 18ga. secured with 4 screws per side to existing decking.
 - .2 Openings greater than 152mm (6") in diameter or 152mm x 152mm (6" x 6"):
 - .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, truss, 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 915mm x 915mm (3' x 3'):
 - .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 41 19

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PART 1 - GENERAL

1.1 RELATED SECTIONS

- .1 Section 01 11 00 – Scope of Work
- .2 Section 01 56 00 – Temporary Barriers and Enclosures
- .3 Section 02 41 19 – Selective Demolition and Removal
- .4 Section 07 52 00 – SBS Modified Bituminous 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 of carpentry details or interfaces for Consultants review.

- .6 Where requested, mock-up of exposed carpentry shall be made available for review of Owner and Consultant. 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 tarpaulins with sufficient 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 or concrete surfaces 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 or concrete elements.
- .6 Moisture Content:
 - .1 At time of delivery and maintained at site.
 - .1 Boards and lumber 51mm (2") and less in thickness: 19% or less.

.2 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) or Alkaline Copper Quaternary (ACQ).

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. Common nails are not acceptable.
- .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, Rockwool 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.
- .4 Apply wood treatments following manufacturer's instructions, and handle as per Safety Data Sheet instructions.

3.3 INSTALLATION

- .1 Comply with requirements of local Building Codes:
 - .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

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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 including all unused curbs, sleepers and equipment as noted on the Roof Plan and specified herein in preparation for installation of a new low slope roof system including but not limited to:
 - .1 Install new 1 ply kraft laminate vapour retarder, in adhesive.
 - .2 Install new tapered glass faced polyisocyanurate insulation package as per Roof Plan, and as per manufacturer recommended shop drawings, mechanically fastened.
 - .3 Install 1 layer of .25" siliconized gypsum overlay board, mechanically fastened.
 - .4 Install 1 ply modified bitumen base sheet and flashings, self-adhered.
 - .5 Install 1 ply, modified bitumen granulated cap sheet and flashings, torch applied.
 - .6 Install new prefinished metal flashings, hook strips, and trim at all perimeter and projection locations where indicated on drawings and detailed in related technical sections.

1.2 RELATED SECTIONS

- .1 Section 01 11 00 – Summary of Work.
- .2 Section 01 35 23 – Health and Safety.
- .3 Section 01 56 00 – Temporary Barriers & Enclosures.
- .4 Section 02 41 19 – Selective Demolition and Removal.
- .5 Section 06 10 00 – Rough Carpentry.
- .6 Section 07 62 00 – Sheet Metal Flashing & Trim.
- .7 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 A123.15: Polymer-Modified Bitumen Sheet, Prefabricated and Reinforced.
 - .4 A123.16: Asphalt Coated Glass Base Sheets.
 - .5 A231.1: Precast Concrete Paving Slabs.
 - .6 0121M: Douglas Fir Plywood.
 - .7 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): Roof Practices Manual, Latest Revision, and includes Technical Updates issued at the time of RFQ posting.
- .6 Canadian Roofing Contractors Association (CRCA): Roofing and Waterproofing Manual.

1.4 SUBMITTALS

- .1 Provide to Quality Assurance Observer, within five (5) working days after Notice of Award:

- .1 Initial project work schedule showing anticipated progress stages and final completion of work from Start Date. Do not commence Work before project schedule has been provided and reviewed.
- .2 Provincial Ministry's Notice of Project form or equivalent for Place of Work, notarized and executed.
- .3 Current WorkSafeBC Clearance Letter for Place of Work.
- .2 Provide to Owner, at Prestart Meeting:
 - .1 Finalized project work schedule listing start date, anticipated number of working days working, and manpower assignments for project.
 - .2 Safety Data Sheets (SDS) pertaining to all proposed materials to be used on site to perform Work.
 - .3 Letter by Contractor certifying that all specified roof system components are compatible, are approved by Manufacturer, meet specified warranty terms, and are compatible with existing substrates.
 - .4 Applicable shop drawings for tapered insulation layout and other specified items to be reviewed by Consultant prior to prefabrication and delivery.
 - .5 Appropriate securement patterns for mechanical fastening of insulation and deck overlay boards, and adhesive pattern for overlay boards as applicable.
 - .6 List of "Trained Membrane Approved Applicators" to work and be present during performance of Work.
 - .7 Other submittals as directed by the Owner.

1.5 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 and installation type.
 - .1 Contractor's installers must be certified for installation of specified materials.
 - .2 Owner reserves right to reject any proposed Subcontractor for reasonable cause.

1.6 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.

1.7 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 When required, provide roof sampling where directed by Observer and make good without additional cost to Owner.
- .3 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.
- .4 Copies of Q.A. Observation Reports to be issued by Observer to Owner and Prime Contractor.
 - .1 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.

1.8 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.
 - .1 Some manufacturers may have specific storage requirements, such as for insulation or gypsum products. Follow manufacturer's published storage requirements. This may require removal of factory packaging and subsequent addition of air spaces and covers. Failure to follow manufacturer's storage requirements may result in rejection of material and removal from site at no cost to the Owner.
- .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.

1.9 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 WorkSafe BC 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 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.

1.10 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.
- .4 When removing vents, skylights, etc, ensure the opening are covered to prevent moisture or odour infiltration into the building. Openings beyond a certain size may require to be identified as a fall hazard and protected appropriately.

1.11 SAFETY AND PROTECTION

- .1 Refer to Section 01 35 23 - Health and Safety.

1.12 WIND UPLIFT

- .1 A wind load calculation (NRCA Wind Load Calculation for roof covering and add-ons) has been performed on this building. Contractor is required to confirm this calculation and interpretation with the primary membrane manufacturer.

- .1 Field area is defined as areas not identified as perimeter or corner zones, and must meet a wind uplift pressure of -6kPa (-13psf).
- .2 Perimeter area is defined as a 1m (3.28') picture frame at the edge of the building and must meet a wind uplift pressure of -9kPa (-39psf).
- .3 Corner area is defined as 1m x 1m (3.28'x3.28') and must meet a wind uplift pressure of -1.9kPa (-39psf)

1.13 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 RFQ price.
- .2 Manufacturer's System Warranty:
 - .1 Provide a written Ten (10) Year Membrane Manufacturer's No Dollar Limit System Warranty from the date of Approved Final Inspection. Cost of Manufacturer's Warranty to be included in the RFQ price.
- .3 RCABC RGC RoofStar Guarantee if selected by Owner as Separate Price:
 - .1 Provide to the Owner, the RGC RoofStar Ten (10) Year Guarantee. The cost of the RCABC Guarantee Administration Fees and Milestone Observation Reviews only are to be provided
 - .2 Cost of all Field Reviews to be paid by Owner.
- .4 Costs of Post Final Field Review(s) or additional field reviews as per 1.21 of Section 01 00 00, if required, shall be charged back to the Contractor.

PART 2 - PRODUCTS

2.1 GENERAL

- .1 All system materials are to be sourced from a single manufacturer with accessory products meeting manufacturer's material compatibility requirements to achieve required System Warranty and other specified warranties.
 - .1 Equivalent systems that meet design intent may be proposed in writing, a minimum 5 days prior to project close. All accessory materials must be supplied and / or approved by the primary membrane manufacturer.
 - .2 Proposals must include a side by side material comparison table showing both the specified and proposed materials, and must comply fully with the experience and job reference requirements of Section 1.6 Quality Assurance of these specifications.
 - .1 Support documents such as Technical Data Sheets shall provide all figures to allow comparisons to base materials requirements.
 - .2 Support documents shall also indicate CSA 123.21-14 Wind Uplift testing to meet the building use and location.

- .3 Equivalent systems shall qualify for all specified warranties.
- .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. Letters of acceptance from the primary manufacturer should be provided for the project record.
- .3 Specifications, installation instructions, limitations, and/or restrictions of respective manufacturers must be reviewed by QA Observer for acceptability for intended use with membrane manufacturer's products.

2.2 FASTENERS, PLATES & FASTENING BARS

- .1 Where required, all fasteners and plates to meet requirements of CSA 123.21-14 Standard for wind uplift.
- .2 Roofing Materials:
 - .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 123.21-14 requirements, and manufacturer's design letter:
 - .1 #14 MP Fastener.
 - .2 #15 HD Fastener. Confirm with Manufacturer if upgraded fastener is required.
 - .3 Size of plate to be determined by membrane manufacturer for 2 7/8" HEX, 3" Round, or 2" Seam Plate.
 - .3 Wood to Steel: Phillips Modified Truss Head fastener as manufactured by UCAN Fastening Products or Master Driller Wafer Plymetal or Wafer Reamer as manufactured by Leland Industries, of sufficient length to penetrate into substrate a minimum 6mm (.25"), zinc plated. Install according to manufacturer's instructions.
 - .1 When Alkaline Copper Quaternary (ACQ) treated wood is present, fasteners shall be upgraded to hot-dipped galvanized steel, stainless steel, silicon bronze, copper or specially coated suitable for use in ACQ such as DT1700.
 - .4 Wood to Wood: No. 8 screws of a suitable length to penetrate into substrate a minimum 19 mm (0.75"). Install according to manufacturer's instructions.
 - .1 When Alkaline Copper Quaternary (ACQ) treated wood is present, fasteners shall be upgraded to hot-dipped galvanized steel, stainless steel, silicon bronze, copper or specially coated suitable for use in ACQ such as DT1700.
 - .5 Steel to Steel: Master Gripper Self-Drilling Screws with wafer head as manufactured by Leland Industries, of sufficient length to penetrate into substrate a minimum 6mm (.25"). Install according to manufacturer's instructions.
 - .6 Wood/steel to concrete or concrete block: 5/16" Ultracon Fastener as manufactured by Elco Construction Products or equal approved by membrane manufacturer, to penetrate substrate by 32mm (1.25").
 - .7 Steel/aluminum to aluminum: 410 Case Hardened Stainless Steel Master Gripper MDP Self-Drilling Screws with wafer head as manufactured by Leland Industries, of sufficient length to penetrate into substrate a minimum 19mm (.75"). Install according to manufacturer's instructions.

- .8 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 (.25" x .375") slotted holes on 203mm (8") o/c. Acceptable material: TB-120 aluminum termination bar by Tru-Fast or equal approved by membrane manufacturer.
- .9 Termination bar fastener for wood, steel or aluminum:
 - .1 Tru-Fast Ultra Solid Stainless Steel fastener to penetrate substrate by 19mm (.75") 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.
- .10 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 (1.25") c/w EPDM galvanized steel sealing washers.
- .11 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 (1.25").
- .12 Wood Sleeper to rooftop condensing unit:
 - .1 Hanger bolt: Grade 18-8 stainless steel, minimum 9.5mm (.375" {3/8"})-16 diameter, in length suitable to penetrate minimum 51mm (2") into sleeper and extend minimum 51mm (2") above, with 15.9mm (.625" {5/8"}) plain centre.

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 torch application:
 - .1 Elastocol 500 by Soprema Inc. or Owner approved equivalent.
- .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 Inc. or Owner approved equivalent.
- .3 For Kraft Laminates:
 - .1 Solvent based Primer / Adhesive: Non-flammable bituminous based adhesive composed of solvents, bitumen and SBS polymers, 63% solids by weight.
 - .1 Soprastop Adhesive (Winter Grade) or Owner approved equivalent.

2.4 VAPOUR RETARDER

- .1 Field Membrane:
 - .1 Kraft laminate vapour retarder membrane consisting of two layers of high strength kraft paper laminated together with asphalt. Edges to be reinforced with unidirectional glass

fibres. Material to provide Class II water vapour permeance as determined by ASTM E 96 Procedure A test method, unaged 41ng/Pa.s.m² (.7 perm).

- .1 Soprastop by Soprema Inc. or Owner approved equivalent.
- .2 SBS Membrane Flashings and Tie-in Flashings:
 - .1 Self-Adhered grade SBS modified bitumen: minimum 3.0mm thick with composite reinforcement scrim, and conforming to CSA 123.21-15. Top surface covered with thermofusible polyolefin film with self-adhesive bitumen bottom surface.
 - .1 Sopralene Flam Stick by Soprema Inc. or Owner approved equivalent.

2.5 TAPERED INSULATION - POLYISOCYANURATE

- .1 Closed-cell polyisocyanurate foam rigid insulation boards to ASTM C1289 Type II, Class 1, 2, or 3, Grade 2, manufactured with HCFC-free blowing agent (Pentane) bonded during manufacturing process to inorganic coated glass facers on top and bottom surfaces:
 - .1 Approved and listed for a Class 1 Roof Assembly meeting requirements of CSA123.21 and fire resistance without use of sprinkler protection.
 - .2 Meet physical property requirements of ASTM C 1289 and CAN/ULC S704 with a min. compressive strength of 138 kPa (20 psi).
 - .3 Dimensional stability change of less than 2% conforming to ASTM D 2126.
 - .4 Conformity to CAN/ULC S704 and Can/ULC S770 for Long Term Thermal Resistance in polyisocyanurate insulation. Acceptable Products:
 - .1 Sopra-ISO Plus polyisocyanurate by Soprema Inc. or Owner approved equivalent.
- .2 Insulation Board Size: Individual panel size no larger than 1.22m x 1.22m (4' x 4').
- .3 Insulation Thickness:
 - .1 As recommended by supplier and confirmed via submitted sloped insulation shop drawing.
- .4 Insulation Layer Size: Tapered insulation as indicated on roof plan drawing. Unless otherwise noted on roof plan drawings, tapered insulation to have a slope of 2%.
- .5 All tapered insulation to be factory cut and mitered.
- .6 Tapered Drainage Sumps:
 - .1 Size to be 1.2m x 1.2m (4' x 4') and provide a 4% slope to drain. Notify QA Observer of any discrepancies found with the slope package.
 - .2 Review roof plan for one oversized sump location.
- .7 Tapered Crickets:
 - .1 Crickets shall be tapered at 4% with an appropriate ratio to promote drainage, and located as shown in the roof plans and as recommended by supplier and confirmed via submitted sloped insulation shop drawing.

- .2 Curbs or rooftop penetrations wider than 610mm (24") are to receive a 4% cricket sized appropriately to divert water around the curb, and / or as indicated on drawings.
- .8 Submit all shop drawings to QA Observer for review prior to prefabrication.

2.6 COVER BOARD

- .1 Gypsum Cover Board: Cover Board: Dimensionally stable, fire resistant, gypsum based roof board with treated core for moisture and mould resistance; size no larger than 1.2m x 2.4m (4'x8'). Roof board to have factory laminated enhanced glass-mat facer meeting ASTM C 1177.
- .1 Dens Deck Prime 6.4mm (.25") minimum thickness for horizontal applications (field), 12.7mm (.5") minimum thickness for vertical applications (unsupported walls) as manufactured by Georgia-Pacific LP or Owner approved equivalent.

2.7 MODIFIED BITUMEN MEMBRANE

- .1 Base Sheet Flashing: Install S. A. flashings before base sheet field membrane at combustible perimeters and curbs:
 - .1 Self-Adhered grade SBS modified bitumen: minimum 3.0mm thick with composite reinforcement scrim, and conforming to CSA 123.21-15. Top surface covered with thermofusible polyolefin film with self-adhesive bitumen bottom surface.
 - .1 Sopralene Flam Stick by Soprema Inc. or Owner approved equivalent.
- .2 Base Sheet Field Membrane:
 - .1 Semi-adhered modified bitumen, minimum 2.5mm thick, mass 2.9 kg/m², with glass mat reinforcement and conforming to CSA 123.21-15, thermofusible film top and discontinuous self-adhesive strips on the bottom surface. Membrane shall utilize 60% self-adhesive and 40% torch welded side laps:
 - .1 Colvent 830 by Soprema Inc. or Owner approved equivalent.
- .3 Base Sheet Cover-Strip
 - .1 Torch grade modified bitumen: Minimum 2.5mm thick and 330mm (13") wide with composite reinforcement and conforming to CSA 123.21-15. Top and bottom surface covered with thermofusible polyolefin film.
 - .1 SopraLap by Soprema Inc. or Owner approved equivalent.
- .4 Base Sheet Flashings:
 - .1 Torch grade modified bitumen: minimum 3.0mm with minimum 180g/m² non-woven polyester and conforming to CSA 123.21-15. Top surface to have thermofusible polyolefin film with bottom surface covered with thermofusible polyolefin film.
 - .1 Sopralene Flam 180 by Soprema Inc. or Owner approved equivalent.
 - .2 Self-Adhered grade modified bitumen: minimum 2.5mm with minimum 180g/m² non-woven polyester, and conforming to CSA 123.21.21-15. Top surface to have thermofusible polyolefin film with self-adhesive bitumen bottom surface.
 - .1 Sopralene Flam Stick by Soprema Inc. or Owner approved equivalent.
- .5 Cap Sheet Field and Flashing Membrane:

- .1 Torch grade modified bitumen, minimum thickness 4mm, with composite reinforcement, and conforming to CSA 123.21-15. Top surface to have ceramic granules and torch grade bitumen bottom surface covered with sand or thermofusible polyolefin film. Colour to be light grey.

- .1 Colvent Traffic Cap 860 by Soprema Inc. or Owner approved equivalent.

2.8 LIQUID APPLIED PMMA RESIN FLASHINGS

- .1 Catalyzed Acrylic Resin Flashing System: Materials 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 primary membrane manufacturer for each application.

- .1 Alsan RS 230 by Soprema Inc. or Owner approved equivalent.

2.9 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 QA Observer, pitch pockets are strictly prohibited. Flanges to be primed with rubberized asphalt compatible primer. Drain materials must meet CSA-B79 and ASME A112.6.4 standards, and be listed with QAI Laboratories.

- .1 Clamp-Tite by Menzies Metal Products or Owner approved equivalent. Determine appropriate size to fit ID of existing piping.

- .1 If required: Supply and install new aluminum or copper through wall box scuppers, with the following requirements:

- .1 Braised or welded full 102mm (4") flange.
- .2 Incorporated clamping collar.
- .3 Exterior cleanout box sized to fit drain outlet.
- .4 76mm (3") downspout on outlet cleanout box.
- .5 Drain to include strainer kit specifically designed to fit this scupper drain type
- .6 Materials to be manufactured by Menzies Metal Products, or Owner approved equivalent.

- .2 Overflow Drains: 76mm (3") Clamp-Tite Overflow Scupper Drain by Menzies Metal Products, or Owner approved equivalent.

- .3 Drain Seals: Fernco Couplings and associated hose clamps, or Owner Approved Equivalent.

- .1 Use of other mechanical seals to be confirmed in advance with the QA Observer.

- .1 If and when internal mechanical seals are accepted, seals shall be U-Flow by OMG Roofing Products. Allow for potential delays for ordering. Substitution with other products is not acceptable.

- .4 Plumbing Stack Flashing: Welded Aluminum by Menzies Metal Products or Owner Approved equivalent. Flashings to have been tested to CSA B272 standard and be marked by way of adhesive label or die stamp.
- .5 B-Vent Flashing or similar round duct penetrations: spun Aluminum penetration hardware as manufactured by Menzies Metal Products or Owner approved equivalent, or site constructed curbs complete with shop fabricated 'square-to-round' flashings, or Owner Approved Equivalent complete with 2 caulked storm collars on each "B-Vent" flashing. Top of penetration hardware or curb to be a minimum of 8" above finished roof surface.
- .6 Roof Walkway Membrane / Pads: As recommended by primary membrane manufacturer for use at ladder landings, obvious work areas, or as shown on the Roof Plan.
- .7 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. or Owner approved equivalent.
- .8 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.
- .9 Pourable Sealer: As recommended by primary membrane manufacturer.
- .10 Sealing Compound: Rubberized Sealing Compound to CAN/CGSB-37.29, and as recommended by primary membrane manufacturer.
- .11 Spray Urethane foam: One or two component polyurethane spray foam insulation. Use low pressure spray foam insulation at force sensitive areas.
- .12 Fire Protection in flame sensitive locations, as determined by the Contractor: 165mm wide tape consisting of a glass fleece reinforcement and SBS modified bitumen, and as recommended by primary membrane manufacturer.
- .13 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 Owner approved equivalent.
- .14 Foam Gaskets for mechanical curbs: Self-adhering tape seal made from open polyurethane foam impregnated with a water based acrylic. MST by EmSeal LLC or better.
- .15 Sheet Metal Flashings and Trim: As per Section 07 62 00 and fabricated from SMP coated 24 gauge prepainted steel. Hook strips to be 2 gauges heavier than flashings. Colour to be determined by Owner.
- .16 Sealants: As per Section 07 92 00. Colour of sealants to match component applied to.

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 Roofing Contractors Association of BC (RCABC): Roof Practices Manual, Latest Revision, and includes Technical Updates issued at the time of RFQ posting,
- .3 Canadian Modified Bitumen Manufacturer's Association's recommendations,
- .4 Manufacturer's preprinted and published technical specifications,
- .5 ULC Design No. S-107 criteria,
- .6 CSA 123.21-14 testing protocols.
- .7 Compliance with local fire insurance requirements,
- .8 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 Cover openings in the roof such as curbs for mechanical or skylight, to prevent moisture, dirt / debris, and odour entering the structure.
- .7 Do not use spray installation methods on days with significant wind.
- .8 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 38mm (1.5") expanded 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 / or 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 roof top equipment requiring disconnection to be responsibility of Contractor in consultation with Owner unless otherwise specified elsewhere in contract documents.
- .2 Existing Roof Removal:
 - .1 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 in preparation for installation of new roof system. Dispose removed items to an appropriate site for building material waste.
- .2 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 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 from the manufacturer for the 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 QA Observer 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.

- .1 At metal roof curbs: Where extension height required is greater than 102mm (4.0"), install new galvanized metal C-Channel, prefab curb extension, 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.
 - .1 Wood cant exists at the base of the wall, remove cant to blocking or deck level.
 - .2 If fibre-cant exists, remove and install blocking to suit to receive new plywood sheathing.
- .3 Replace any seriously damaged or deteriorated wood at perimeters and projections with new construction grade SPF 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 in a staggered pattern.
 - .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 VAPOUR RETARDER

- .1 Install one (1) ply vapour retarder membrane (adhered) and flashing (self-adhered) as per manufacturer's written instructions, free of blisters, tears, wrinkles and fish-mouths.
 - .1 Power vacuum deck surfaces to remove any loose dirt and debris. Substrate must be clean, dry, and free of non-bitumen compatible residues, dust, grease, and other contaminants.
 - .2 Vapour retarder must be installed on same day as primer application.
 - .3 Do not install when it is raining or snowing, on wet/humid surfaces, or when inclement weather is expected shortly.
 - .4 Review deck for proud nails or other sharp objects. Correct existing conditions to provide a smooth substrate.
- .2 Primer Installation:
 - .1 If required by primary membrane manufacturer, install primer to deck at rate recommended in writing by primary membrane manufacturer.
 - .2 Prime all non-metal exposed surfaces to receive vapour retarder membrane and flashing. Apply primer to clean and dry surfaces with a paint brush, roller or sprayer at temperatures 0°C (31°F) and above.
 - .3 Ensure all substrates are fully covered with primer leaving no areas bare, avoid pooling.

- .4 Allow primer to dry completely prior to installation of new vapour retarder membrane.
- .3 Vapour Retarder Installation (Adhered):
 - .1 Begin application at bottom of roof slope. Unroll membrane onto prepared substrate without adhering for alignment.
 - .2 Roll out membrane perpendicular to slope.
 - .3 Overlap each preceding sheet by a minimum of 76mm (3") lengthwise following reference chalk line and by a minimum of 152mm (6") at each end. Stagger end laps by at least 305mm (12").
 - .1 Apply primer / adhesive in continuous ribbon in all side and end laps while holding lap open. Press closed and ensure full contact.
 - .4 Install target piece of vapour retarder, embedded in primer / adhesive at all penetrations.
 - .5 Repair all holes, tears, or cuts with a minimum 152mm (6") wide strip of new material, embedded in primer / adhesive.
- .4 Membrane Flashing Installation:
 - .1 Prime substrate to receive self-adhered base sheet flashing with primer and rate of application as recommended by manufacturer. Avoid pools and heavy areas and allow primer to dry a minimum 30 minutes or until staining does not occur to touch and surface becomes tacky.
 - .2 Ensure complete coverage of primer to both prepared substrates and to field sheet membrane prior to placement of membrane flashing.
 - .3 Install membrane flashing onto substrate in strips one membrane roll wide (40" or 1m) and extend over perimeters as shown on detail drawings.
 - .4 Field measure and cut flashing membrane to length required for flashing at each detail and roll up for installation.
 - .5 Unroll and install membrane flashing onto substrate by removing release paper and discarding.
 - .6 Using weighted roller as recommended by manufacturer, roll all surfaces of roof membrane to ensure continuous adhesion with membrane to substrate. Firmly press membrane into substrate to ensure proper bond.
 - .7 Lap membrane flashing onto field vapour retarder membrane a minimum 152mm (6"). Side laps between adjacent sheets to be a minimum of 102mm (4") wide, or as required by the membrane manufacturer.

3.7 TAPERED INSULATION

- .1 Install tapered base insulation according to layout on reviewed shop drawings and roof plan drawing(s). Report any discrepancies to Consultant.
- .2 Having reviewed the completed vapour retarder, install any deflection infill as indicated on the approved shop drawings or any additional needed as identified during the review.
- .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 Tapered insulation package shall be installed in soldier fashion as per supplier installed layout.
- .5 Tapered and/or cricket packages shall be placed between flat stock insulation on multi-layer systems, or on the bottom of single layer systems.
- .6 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.
- .7 For uneven surfaces, trimming or slitting of boards may be necessary. Fill all gaps larger than 3mm (0.125") with insulation slivers.
- .8 Plan out where cover-board will be installed and mechanically attached through the insulation.

3.8 COVER BOARD

- .1 Cover Board Adhered Installation:
 - .1 Install a layer of field cover board panels with joints offset and staggered, mechanically attached through installed insulation as per manufacturer's written instructions and to meet CSA 123.21-14 requirements. Refer to manufacturer's design letter.
 - .2 Check underside of deck before installation to eliminate damaging any existing conditions below deck.
 - .3 Do not use wet or damaged cover board panels. Panels must be dry for proper installation.
 - .4 Custom cut cover board panels at perimeters and projections to suit, dry fitting as necessary. Install cover boards tightly together with no gaps between boards larger than 3mm (0.125").
 - .1 Cut boards as required to fit snug at all perimeters, walls, and roof projections.
 - .2 Cut straight lines using proper tools and snap chalk lines.
 - .3 Cut boards cleanly where slope changes direction. Do not break boards by stepping on them to acquire changes in deck slope.
 - .5 Screws and plates shall be spaced equally around each board, no closer than 152mm (6") to the board edge and no farther than 305mm (12") away from the board edge.
 - .6 The Contractor is responsible for confirming mechanical attachment rates with the primary membrane manufacture, and providing it in writing to the QA Observer prior to start. Inadequate attachment will result in additional fastening to meet manufacturer's published CSA123.21-14 testing data.
 - .7 Where cover board is field primed, allow sufficient time for applied primers to dry and flash-off. Roof board surface must be thoroughly dry before installation of membrane.

3.9 MODIFIED BITUMEN MEMBRANE APPLICATION

- .1 Base sheet membrane and flashing membrane are to be self-adhered. Cap sheet field membrane and cap sheet flashings are to be torch applied.
 - .1 Contractor is permitted to use self-adhered, blackline adhered, mechanically attached, liquid applied, and accessories materials from the membrane manufacturer's range of products that are equivalent in performance to specified materials. This measure is provided as a means to aid the installers in the safe execution of their duties and not an opportunity for additional costs or downgrading performance. The purpose is to support

- the required Contractor risk assessment and fire safety measures during the installation of the roofing assembly. Notify the observer of modifications prior to proceeding for record keeping purposes.
- .2 Contractor is to have considered order of material application via a risk assessment, and determined if pre-stripping is desired.
 - .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 Base Sheet Field Membrane, Self-Adhered Installation:
 - .1 Prime surfaces at roof projections and around perimeters to receive new base sheet membrane and flashings.
 - .1 Install specified primer at application rate and temperature recommended by manufacturer to avoid pooling and heavy areas.
 - .2 Allow primer to dry a minimum of 30 minutes or until staining does not occur upon touch and surface becomes tacky.
 - .2 Field measure and cut membrane to length of run required and roll up for installation.
 - .3 Starting at low point of roof, perpendicular to slope, unroll base sheet membrane and position.
 - .4 Once aligned in desired position, peel back a portion of release under film and press membrane onto substrate for initial adherence.
 - .5 Hold membrane tight and peel back release under film by pulling diagonally to remove fully and discard. Broom or roll sheet into place to ensure full contact with substrate
 - .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 Where required as determined by the contractors' fire safety risk assessment weld all side and end laps of membrane with hot air gun or torch. Laps to be bonded to the satisfaction of QA Observer.
 - .6 Base Sheet Flashing, Self-Adhered Installation:
 - .1 Field measure and cut flashing membrane to length required for flashing at each detail and roll up for installation.

- .2 If pre-stripped, install membrane gusset flashing onto substrate in strips one membrane roll wide (40" or 1m) by 152mm (6") to tie base sheet into previously installed base stripping.
- .3 Install base sheet flashing centered between the 90° transition from field of roof to vertical area, so that 76mm (3") of gusset extends onto the flat of the roof and 76mm (3") up wall or curb.
 - .1 Ensure the 90° transition is kept tight and adequately bonded.
 - .2 Bridging will be directed to be cut out and repaired.
- .4 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").
- .5 Membrane gusset reinforcement to be installed using hot air gun or torch application on top of base sheet membrane at all inside and outside corners. Consultant to review gusset installation before installation of cap sheet membrane.
- .6 If base flashings were not pre-stripped, refer to Item 3.7.4 for application method.
- .7 Where required as determined by the contractors' fire safety risk assessment weld all side and end laps of membrane with hot air gun or torch. Laps to be bonded to the satisfaction of QA Observer.
- .7 Cap Sheet Field Membrane, Torch Installation:
 - .1 Prior to the installation of the cap sheet field membrane installation contact the consultant to review the completed base sheet installation with regards to locating and installing extra spun copper roof drains to enhance and improve drainage. Failure to observe this milestone and proceeding with cap sheet installation before drainage is evaluated will result in any capped areas being fully degranulated and recapped at no expense to the owner.
 - .2 Complete installation of base sheet flashing prior to installing membrane cap sheet and cap sheet flashings.
 - .3 Field measure and cut membrane to length of run required and roll up for installation.
 - .4 Starting at low point on roof, perpendicular to slope, unroll cap sheet, align and re-roll from both ends.
 - .5 Unroll and install cap sheet carefully in straight and parallel rows keeping majority of flame on membrane roll.
 - .6 Cap sheet to be torched across flat of roof, overtop of base sheet, and terminated at perimeters and vertical surfaces ensuring a good bond.
 - .7 Lap sheets 76mm (3") for side laps and a minimum 152mm (6") for end laps. Offsetside laps in cap sheet 305mm (12") minimum from those of base sheet.
 - .8 Where required as determined by the contractors' fire safety risk assessment weld all side and end laps of membrane with hot air gun or torch. Laps to be bonded to the satisfaction of QA Observer.
- .8 Cap Sheet Flashing, Torch Installation:

- .1 Cap sheet membrane flashing to be torched up and over perimeter details, extending a minimum 51mm (2") onto horizontal surfaces.
- .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 flashing membrane to offset base sheet flashing joints by 50% and extend a minimum of 152mm (6") onto degranulated cap field sheet. All end lap joints to be offset a minimum 305mm (12") from base stripping side laps.
- .5 Align bottom edge to a chalk reference line along cap sheet membrane.
- .6 Overlap each preceding cap sheet flashing sheet by min. 76mm (3") on side laps.
- .7 Properly secure flashings to their support, without sags, blisters, fish-mouths or wrinkles with terminations as indicated on drawings and details.
- .8 Where required as determined by the contractors' fire safety risk assessment weld all side and end laps of membrane with hot air gun or torch. Laps to be bonded to the satisfaction of QA Observer.
- .9 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 Z pattern with torch as recommended by manufacturer over membranes that are covered with thermofusible film.
 - .6 Staggering of Sheets: End laps between base and cap sheets to be offset a min. of 305mm (12"). 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 selvedge side laps of base and cap sheets are unequal, adjust cap roll width occasionally to maintain alignment.
 - .1 If installing a half sheet to restore stagger, ensure cut edge is straight and true.
 - .7 Procedure to Seal Voids: Where voids are created by overlapping rolls of membrane, cut off corner of selvedge edge where covered by next roll of material.

- .8 Selvedge Edge Protection: Granules along edge of membrane to be primed prior to application of adhesive to provide good adhesion of laps.
- .9 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.
- .10 Compound Flow (bleed out) at Seams: When torch applying membrane, provide consistent, continuous bleed-out along all seams, no less 3mm (.125") and no greater than 6mm (.25") in width.
- .11 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.
- .12 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.
- .13 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 chalk lines to mark outline of areas requiring degranulation. Achieve a uniform black surface of bitumen across 100% of embedment areas to be overlapped.
- .14 Primer Application: Sanded membrane left exposed overnight or longer to be primed before continuing membrane installation to ensure good adhesion.
- .15 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.
- .10 Correction Requirements for Defects and Deficiencies to as per Manufacturers Published directions, with the following exceptions:
 - .1 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" x36"). Smaller sizes are not acceptable. Neatly cut / remove the selvedge edge from cap sheet prior to application, ensuring a straight edge.
 - .2 Correction of granule loss or degranulated area with primer and granules is not acceptable. If liquid applied membranes and granules are intended by the contractor, discuss first with QA Observer, and ensure all applications are installed straight and with a clean edge, and extended from edge to edge of the membrane being repaired.
 - .3 The intent of all repairs is to look like the work was intended.

3.10 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.

3.11 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.
- .2 Coordinate and cooperate with the supply and installation of fall protection anchors and related accessories / accessories. Ensure all penetrations and installations are sealed and watertight at the end of each day.
 - .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.

3.12 ROOF DRAINS

- .1 Drain Installation (New Drains):
 - .1 Drain body to be secured to substrate with min. four (4) fasteners per drain as required to properly secure drain body.

- .1 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.
- .2 Drains to be attached to existing drain pipe with mechanical seal.
- .2 Clean and abrade copper flanges to create an oil free, slightly rough surface to receive primer. Do not use drill mounted wire brush.
- .3 Prime flange with membrane manufacturer recommended asphaltic primer.
- .4 Set metal flange of drain body into continuous bed of manufacturer recommended and system compatible roofing cement applied over base sheet membrane.
- .5 Install target patch of membrane reinforcement over metal drain flange. Use a square of 39" x 39" (1m x 1m) base sheet membrane and install over drain at a 45° angle to direction of base sheet rolls.
- .6 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. 36" (915mm) 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 4' x 4' (1.2m x 1.2m), install cap sheet over sump area first without any endlaps and picture-frame into remainder of roof.
- .7 Place Clamping Ring over raised bolt studs. Install stainless steel self-locking nuts to tighten Clamping Ring against membrane flashings until secure. Use drain manufacturer supplied wrench, do not use crescent or other wrench types.
- .8 Install ballast guard strainer dome and secure with cotterless pin or wing nut screw.
 - .1 At paver ballasted areas, podium style drains to have square strainer domes complete with removable, cast aluminum grating. Height of podium drains to be custom fabricated to suit height of adjacent insulation. Top of finished cover dome to be flush with surrounding concrete pavers.
- .9 Additional drains: refer to herein with respect to the evaluation of roof drainage upon completion of the base sheet and before cap sheet is installed.
 - .1 Additional, unit cost, drains where required shall be specified spun copper and installed as noted herein and sealed or covered over to prevent drainage until such time that internal plumbing can be supplied and installed by others.
- .2 Overflow Scuppers: Overflow Scupper Drain Installation:
 - .1 Where applicable and indicated on the Consultant drawing, install new metal scupper over flow drains at perimeter locations indicated on roof plan and/or where directed on site. Coordinate suitable locations with Consultant to suit site conditions. All roof areas must have overflow scuppers.
 - .2 Height of Overflow Scupper Drains:
 - .1 On roof areas without sloped roof deck or tapered insulation, install overflow scupper drains 25mm (1") to 76mm (3") above finished roof membrane as directed on site by QA Observer for each roof area.

- .2 On roof areas with sloped roof deck or tapered insulation, install overflow scupper drains at level of finished roof membrane, unless directed otherwise on site by QA Observer.
- .3 Solder all joints to make continuous water tight seal. Outer face of scupper penetrating through or beyond parapet/perimeter to be encapsulated with prefinished metal cover.

3.13 PLUMBING

- .1 Interior plumbing drain connections where required for the Work shall be the responsibility of the Roofing Contractor.
- .2 Contractor shall provide any plumbing hook-up to drains as part of the contract and to co-ordinate the installation of same with the Client.
- .3 Test all existing drains to verify that they are free flowing.

3.14 MISCELLANEOUS MECHANICAL & ELECTRICAL

- .1 Unless stated in writing elsewhere, contractor is 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 RFQ Pricing, unless specified otherwise on RFQ Form.
- .2 Unless stated in writing elsewhere, contractor is responsible to lift all mechanical units to facilitate roofing under this Section.
 - .1 Unless stated in writing elsewhere, contractor is responsible for restoring the mechanical unit functions at the end of each day.
- .3 When lifting mechanical units, remove existing foam gasket and replace with new specified foam gasket. Ensure surface receiving new gasket is clean and dry, with no remnants of the old gasket.
 - .1 Notify QA Observer if existing mechanical curb is of bolt together type, and has open corners.
- .4 To minimize inconvenience, contractor to coordinate any planned disruptions by providing 5 working days advance notice to the Owner.
- .5 The following is a step by step procedure for removal and re-installation of all Mechanical and Electrical Equipment consisting of:
 - .1 Combined heat/cool units.
 - .2 Cooling only units.
 - .3 Split systems (cooling only).
 - .4 Exhaust Fans.
 - .5 Removal of units.
- .6 Combined heating and cooling units:
 - .1 Locate power source in store and turn off, lock out or tag.
 - .2 Check power source at unit on roof and disconnect.

- .3 Shut off gas and disconnect gas piping and cap both ends to keep out moisture and dirt.
- .4 Disconnect duct work.
- .5 Lift unit using slings, spreaders where necessary and A-Frame with wheels and move to neutral area over plywood sheets.
- .6 Upon completion of roofing, replace unit.
- .7 If unit has been raised; modify duct work, insulation, electrical and gas piping to suit.
- .8 Reseal same to make watertight.
- .9 Turn power on in store, recheck at unit, restart unit.
- .7 Cooling only units:
 - .1 Locate power source in store and turn off, lock out or tag.
 - .2 Check power source at unit on roof and disconnect.
 - .3 Disconnect duct work.
 - .4 Lift unit using slings, spreaders where necessary and A-Frame with wheels and move to neutral area over plywood sheets.
 - .5 Upon completion of roofing, replace unit.
 - .6 If unit has been raised; modify duct work, insulation, electrical piping to suit. Reseal same to make watertight.
 - .7 Turn power on in store, recheck at unit, restart unit.
- .8 Split systems (cooling only):
 - .1 Check power source in store and turn off, lock out or tag.
 - .2 Check power at unit and disconnect.
 - .3 Remove refrigerant into cylinders and store for re-use.
 - .4 Final removal of refrigerant will be accomplished by using approved reclaimer.
 - .5 Disconnect and cap refrigerant lines to keep moisture out.
 - .6 Remove unit using slings, spreaders and A Frame with wheels to a neutral area.
 - .7 *Recharge only with refrigerant removed and stored; not responsible if unit is short of refrigerant.
 - .8 Set unit back on sleepers after reroofing.
 - .9 Reconnect piping and modify as required if unit has been raised.
 - .10 Leak test and evacuate system and recharge with stored refrigerant only.
 - .11 Reconnect electrical, turn power on, turn unit on.

- .9 Exhaust fans:
 - .1 Locate power source in store and turn off tag or lock out.
 - .2 Check power at unit and disconnect electrical and duct work.
 - .3 Raise and move unit using slings and A Frame with wheels to a neutral area.
 - .4 Put unit back on sleepers or curb after reroofing.
 - .5 Reconnect electrical and duct work with modifications as required.
 - .6 Reseal duct work to provide watertight seal.
- .10 Removal:
 - .1 Locate and disconnect power to unit, tag or lock out.
 - .2 Remove electrical to below roof level and disconnect electrical at source and make safe.
 - .3 Tag disconnected line as to location at both ends.
 - .4 Disconnect and remove duct work to below roof level.
- .11 Electrical Instructions:
 - .1 Contractor shall carry the costs of the following electrical work associated with the roof replacement:
 - .1 Where existing Roof Top HVAC Units to be raised or relocated temporarily (to replace curbs etc.), these units should be disconnected, existing feeders to be extended to be extended to the temporary location connected. When the necessary work is completed the units will be disconnected at the temporary locations and reconnected at the permanent locations.
 - .2 Where existing Telephone / Cellular / Cable / Satellite cables run on the existing roof, these cables shall be raised in sections to follow the phasing of the roof replacement and placed back on the new roof. The Contractor to co-ordinate this work with Service Provider.
- .12 Remove and dispose of identified and designated abandoned, redundant, and unused HVAC equipment from roof and worksite.
- .13 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 Consultant approved equivalent.
- .14 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.
- .15 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.

3.15 TEMPORARY WATER CUT-OFFS (NIGHT SEALS)

- .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 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.
- .4 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.
- .5 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.
- .6 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.

3.16 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.

3.17 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.

3.18 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 00

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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 pre-painted 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 41 19 – Selective Demolition & Removal
- .3 Section 07 52 00 – SBS Modified Bituminous 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.
 - .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): Roof Practices Manual, Latest Revision, and includes Technical Updates issued at the time of RFQ posting.
 - .7 Canadian Roofing Contractors Association (CRCA): Roofing and Waterproofing Manual.

1.4 SUBMITTALS

- .1 Mock-ups: Create mock-up sample of irregular metal flashing details and related accessories for review by Consultant. Examples: irregular parapet saddle flashings or gum edge flashings.
 - .1 Provide any additional mock-up samples as reasonably requested by Consultant.
 - .2 Mock up must include at least one outside or inside corner.
 - .3 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.
- .2 Warranty: Upon completion of the project provide Owner with guarantees and warranties listed in Section 1.8 of this specification.

1.5 CONTRACTOR QUALIFICATIONS

- .1 Sheet metal installers must be pre-approved by membrane manufacturer and Consultant if installing membranes.
- .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 Provide protection where sheet metal flashings will be stored on finished roof surfaces.
- .3 Place suitable supports or pallets under metal stock upon delivery. Protect metal from scratches, dents, punctures, and moisture.
- .4 Store caulking and sealants at +5°C minimum.
- .5 Handle and store products in a manner to prevent damage, oxidization, and deterioration.
- .6 Remove and replace damaged products at own expense and to satisfaction of Quality Assurance Observer/Consultant.
- .7 Store membranes and related accessory 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 applicable health and safety Act, Regulations, and Code applicable in the jurisdiction for the Work, 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 Material and Workmanship Warranty covering sheet metal flashing material and workmanship for two (2) years on Contractor's letterhead.
 - .2 Work under this section is to be included in RGC RoofStar Year Guarantee as stated in Section 07 52 00.

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 Pay for any additional testing and observations required by Observer for correction of Work, without additional cost to Owner, when initial tests and observations reveal work failing to meet contract requirements and when construction extends beyond the schedule submitted by the contractor.
- .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 Silicone Modified Polyester (SMP) factory-baked finish. Colour selected by Owner from Manufacturer's standard colour range.
- .3 Cascadia Metals Inc. and Makin Metals are pre-approved manufacturers. Alternate manufacturers requires Approval by Owner.
- .4 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 ACCESSORIES

- .1 Underlay: To be specified base sheet and cap sheet membranes unless otherwise detailed. Self-adhered membrane conforming to CSA A123.3M, minimum 1.0mm thick of SBS modified bitumen, with a top surfacing of tri-laminate polyethylene film and an underside with a protective release film.
- .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 Sealants: as per Section 07 92 00.

2.3 FASTENERS

- .1 Use galvanized, copper, aluminum, stainless steel or coated screws most compatible with materials being employed. Use fasteners as most generally suitable to not cause a galvanic reaction.
- .2 Wood to Wood: No. 8 screws of a suitable length to penetrate into substrate a minimum 19 mm (0.75"). Install according to manufacturer's instructions.
 - .1 When Alkaline Copper Quaternary (ACQ) treated wood is present, fasteners shall be upgraded to hot-dipped galvanized steel, stainless steel, silicon bronze, copper or specially coated suitable for use in ACQ such as DT1700.
- .3 Wood to Steel: Phillips Modified Truss Head fastener as manufactured by UCAN Fastening Products or Master Driller Wafer Plymetal or Wafer Reamer as manufactured by Leland Industries, or Owner Approved Equal, of sufficient length to penetrate into substrate a minimum 6mm (.25"), zinc plated. Install according to manufacturer's instructions.
- .4 Steel to Steel: Master Gripper Self-Drilling Screws with wafer head as manufactured by Leland Industries, or Owner Approved Equal, of sufficient length to penetrate into substrate a minimum 6mm (.25"). Install according to manufacturer's instructions.
- .5 Steel/aluminum to aluminum: 410 Case Hardened Stainless Steel Master Gripper MDP Self-Drilling Screws with wafer head as manufactured by Leland Industries, or Owner Approved Equal,

- of sufficient length to penetrate into substrate a minimum 19mm (.75"). Install according to manufacturer's instructions.
- .6 Fasteners to Masonry or Concrete: MNA635R Nylon Drive Screw Anchor as manufactured by UCAN Fastening Products of a suitable length to penetrate into substrate minimum 38mm (1.5" or 5/16") Ultracon Fastener as manufactured by Elco Construction Products or Owner Approved Equal, to penetrate substrate by 32mm (1.25"), minimum unless otherwise shown. Install according to manufacturer's instructions.
- .1 Drill hole 32mm (.75") deeper than embedment.
- .2 Install colour matching plastic cap or paint to match sheet metal flashings.
- .7 Exposed Fasteners: UDrill Self-Drilling Screws with hex washer head and bonded EPDM fastener as manufactured by UCAN Fastening Products, or Owner Approved Equal, of sufficient length to penetrate into substrate a minimum 19mm (.75"). Install according to manufacturer's instructions.
- .1 Hex Head and washer assembly are to be powder coated or 2 part epoxy painted to match metal flashings.
- .2 Unless otherwise identified in drawings, fasteners are to be case hardened steel.
- .3 Fasteners to be #8 or better.
- .8 Pop Rivets: 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.

2.4 FABRICATION

- .1 Fabricate all possible work in shop in 3.05m (10') lengths by brake forming, bench cutting, drilling and shaping.
- .1 On vertical sections over 406mm (16") and under 1.22m (48") in elevation install metal in 1.52m (5') section as specified and detailed. Profiled metal to include cross or horizontal stiffener breaks.
- .2 On high vertical sections over 1.22m (48") in elevation sheet metal coverage shall be considered cladding. Bring to the attention of the Consultant if areas are not previously identified.
- .2 On coping or flashing with a horizontal dimension of 508mm (20") or greater, use 25mm (1") lock folded standing seam joints.
- .1 Clips for Standing Seams must be a minimum 24 gauge in thickness, 38 mm (1-1/2") wide.
- .3 Form bends with straight sharp lines, angles and corners into true planes, free from twists, buckles, dents and other visual distortions.
- .4 Double-back exposed metal edges at least 12.7mm (0.5"). Exposed raw edges will not be permitted.
- .5 Drip edge flashings that will engage a hook strip shall be hemmed to allow a full 12.7mm (.5") of engagement.
- .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 305mm (12") on center keeping fastener within 32mm (1.25") of drip edge to a maximum 76mm (3") away from drip edge. Use of screw type fasteners are required, nails are not acceptable.
 - .1 No fastening of flashing is permitted within 89mm (3.5") of the roof surface.
 - .2 Discontinuous clips are not to be used without design authority written approval and the request shall have just cause.
- .3 Install in a uniform manner, true to line, free of dents, warping and distortion.
- .4 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 of screws are required, nails are not acceptable. Use nylon plugs and screws where fasteners are exposed, otherwise use concrete drive fasteners where metal flashings are installed over concrete or masonry..
- .5 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.
- .6 Join sheet metal by "S" lock seams and / or standing seams. Space joints evenly where exposed. Form inside and outside corners by means of standing seams. Do not use pop rivets.
 - .1 Lap seams on vertical corners are acceptable only where the vertical run is less than 100 mm (4"). Otherwise corner mating to be completed with a standing seam.
 - .2 For s-lock applications 1 screw every 200mm (8") of width is required within the seams.
 - .3 For standing seam applications, clips must be secured with a minimum 2 screws, and placed a minimum of 1 clip every 200 mm (8") of width.
- .7 The top surfaces of all walls (parapets, expansion joints, roof dividers, etc) will be constructed to provide a minimum of 2% drainage to the interior of the roof.
 - .1 All cap flashings shall be fully supported by a rigid substrate, shims are not acceptable
 - .2 Do not form open joints or cupping that fails to drain water.
- .8 Caulk all sheet metal joints.
- .9 Where existing reglets cannot be reused, provide new saw cut into substrate sized minimum 25mm (1") deep and to suit site conditions.
 - .1 Clean saw cuts free of contaminates and dust.
- .10 At reglets or sawcuts wider than 10mm (.375") and deeper than 19mm (.75") 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.

- .11 Gum edge or gum lip flashings (also known as surface reglets) should be avoided in all circumstances. If job conditions allow for no other alternative, written permission from Consultant for use of gum edge flashing must be obtained.
 - .1 Unless otherwise detailed or stated all surface reglet flashings shall be double gum lip flashings.
- .12 Install sheet metal saddle flashings at parapet to wall locations, over membrane flashings, and secure in place. Saddles to direct water flow away from the sensitive vertical to horizontal transition joint.
 - .1 Punch lock seams are acceptable, however will require appropriate sealants.
- .13 Prepare cut sheet and mock-up installations of metal flashing details for approval by QA Observer prior to installation of sheet metal flashings.
 - .1 If existing substrate conditions are expected to create deflection or oil-canning in the finished flashings, the concern should be brought to the attention of the design authority for discussion prior to installation. Installation of the flashing will indicate the roofing contractors' acceptance of the existing conditions.

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

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PART 1 - GENERAL

1.1 RELATED SECTIONS

- .1 Section 01 11 00 – Summary of Work
- .2 Section 02 41 19 – Selective Demolition and Removal
- .3 Section 07 52 00 – SBS Modified Bituminous Roofing Membrane
- .4 Section 07 62 00 – Prefinished Sheet Metal Flashing & Trim

1.2 REFERENCES

- .1 All codes, standard specifications and by-laws referred to in this section shall be current editions including all revisions, addenda and supplements.
 - .1 ASTM C719 – Standard Test Method for Adhesion and Cohesion of Elastomeric Sealant Joints Under Cyclic Movement (Hockman Cycle).
 - .2 ASTM C920 – Standard Specification for Elastomeric Joint Sealants.
 - .3 ASTM C1193 – Standard Guide for Use of Joint Sealants.
 - .4 ASTM C1311 – Standard Specification for Solvent Release Sealants.
 - .5 ASTM C1330 – Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants.
 - .6 ASTM C1481 – Standard Guide for Use of Joint Sealants with Exterior Insulation and Finish Systems (EIFS).
 - .7 CAN/CGSB-19.13-M87 – Sealing Compound, One-component, Elastomeric, Chemical Curing.
 - .8 CGSB 19-GP-5M – Sealing Compound, One Component, Acrylic Base, Solvent Curing.
 - .9 CGSB 19-GP-14M – Sealing Compound, One Component, Butyl-Polyisobutylene Polymer Base, Solvent Curing.
 - .10 CAN/CGSB-19.17 – One-component Acrylic Emulsion Base Sealing Compound.
 - .11 CAN/CGSB-19.24 – Multi-component, Chemical Curing Sealing Compound.
 - .12 SWRI (Sealant, Waterproofing and Restoration Institute) – Sealant and Caulking Guide Specification.
 - .13 Sealants: The Professionals' Guide, Sealant, Waterproofing and Restoration Institute.

1.3 SUBMITTALS

- .1 Section 01 33 00 – Submittal Procedures.
- .2 Manufacturer's Installation Instructions: Indicate special procedures, surface preparation, perimeter conditions requiring special attention, and field quality control testing.

1.4 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 manufacturer's 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.

1.5 MOCK-UP

- .1 Construct mock-up with specified sealant types and with other components noted.
- .2 Construct mock-up at test area to show location, size, shape and depth of joints complete with back-up material, primer, caulking and sealant.
- .3 Locate where directed.
- .4 Mock-up may be part of finished Work.
- .5 Allow 48 hours for inspection of mock-up by Consultant before proceeding with Sealant Work.

1.6 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.

1.7 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.

1.8 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.

1.9 WARRANTY

- .1 Contractor shall provide five (5) year warranty for Workmanship.
- .2 Include coverage for installed sealants and accessories which fail to achieve air tight seal, water tight seal, and exhibit loss of adhesion or cohesion, or do not cure.

PART 2 - PRODUCTS

2.1 SEALANT MATERIALS

- .1 Sealant shall be a high performance, high movement, single component, low modulus, low VOC, UV Stable, non-sag hybrid sealant.
- .2 Sealants and caulking compounds must:
 - .1 Meet or exceed all applicable 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.
 - .3 Be of a hybrid nature, utilizing silyl-modified polyurethanes, also identified as an MS Polymer.
- .3 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.
- .4 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 Tremco Dymonic FC or Approved Alternate Hybrid Sealants discussed with Consultant
Colour of sealant to be selected to match cladding components.
 - .2 Primer: As recommended by sealant manufacturer to assure adhesion of compound, to prevent staining of substrate.
 - .3 Joint Backing: Polyethylene, urethane, neoprene, or vinyl, extruded closed cell foam in circular shape with diameter 25% greater than joint width before installation; joint breaking tape approved by sealant manufacturer where specified.
 - .4 Cleaning Material: As recommended by sealant manufacturer.

- .2 Concealed Sealants: To be Tremco Dymonic FC or Approved Alternate Hybrid Sealants discussed with Consultant.
- .3 Butyl (for concealed skylight related sealant joints): Tremco Curtainwall Sealant or approved alternate.
- .4 Primers:
 - .1 TREMprime Silicone Porous Primer for porous surfaces and TREMprime Silicone Metal Primer for metals or plastics, or primers as recommended by sealant manufacturer.
- .5 Cleaners:
 - .1 Acceptable cleaners:
 - .1 Dow Corning Primer/Surface Prep Solvent,
 - .2 Methylethylketone (MEK)
 - .3 Isopropyl Alcohol
 - .2 Surfaces to receive sealants are to not be cleaned with Xylol.
 - .3 All substrate materials to be cleaned with compatible cleaners.

2.3 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.
- .2 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.

2.4 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.

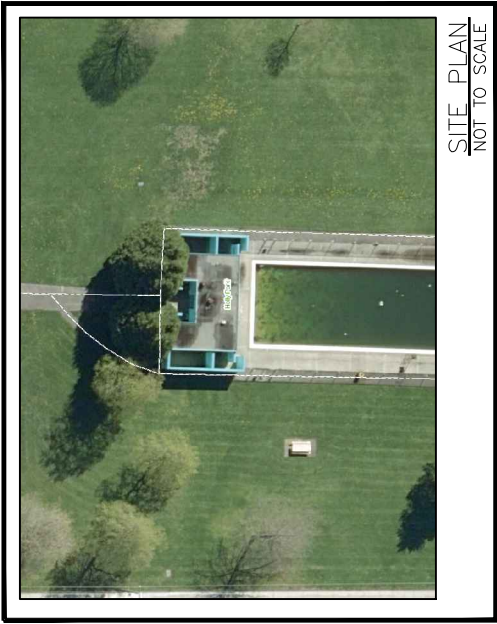
- .5 Ensure that new sealant is adhered to substrates a minimum of 6 to 10 mm at each side of joint.
- .6 Use sufficient pressure to fill voids and joints solid.
- .7 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.
- .8 Tool exposed 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

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SITE PLAN
NOT TO SCALE

EXISTING ROOF COMPOSITION(S):

ROOF AREA 1.1

WOOD DECK
1 PLY PAPER VAPOUR RETARDER
0.5" FIBREBOARD
2 PLY MOD. BIT. MEMBRANE

NEW ROOF COMPOSITION(S):

ROOF AREA 1.1

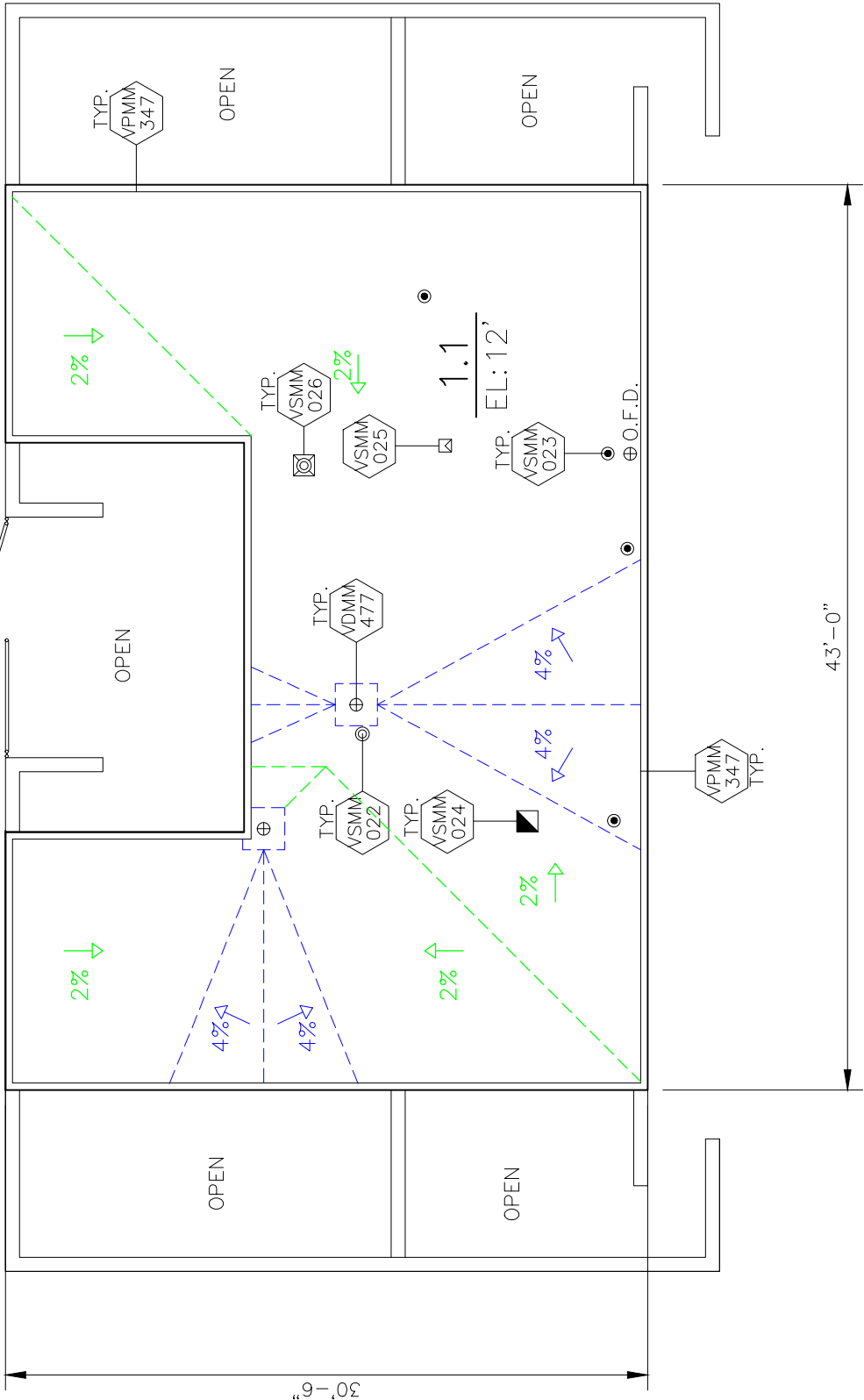
EXISTING WOOD DECK
NEW 1 PLY VAPOUR RETARDER
NEW 2% TAPERED POLYISO. INSULATION
NEW 4% INSULATION CRICKET
NEW 0.25" DENSDECK PRIME
NEW 2 PLY MOD. BIT. MEMBRANE

APPROXIMATE ROOF AREA (SQ. FT.)

1.1 – 1,102

TOTAL APPROXIMATE ROOF AREA (SQ. FT.)

1,102



RFQ

LEGEND

ROOF PROJECTIONS:

ANTENNA	HVAC UNIT ON SLEEPERS
BREATHING	LADDER
CAPPED OFF/ABANDONED STACK	LIGHT POST
CHANGE IN ELEV.	PIPE SUPPORT
CHIMNEY	PITCH POCKET
CONDUIT LINE	PLUMBING OR SOIL STACK
CONTROL JOINT	RA
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	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. © 2018 BY IRC GROUP INC.



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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:

HOLLY POOL
10662 148 ST
SURREY, BC

IRC #:

21089

W.O.#:

VR18-120SP

SCALE:

1/8"=1'

DATE:

OCT/2018

DRN. BY:

B.W.

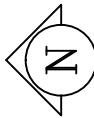
CHK. BY:

D.W./J.M.

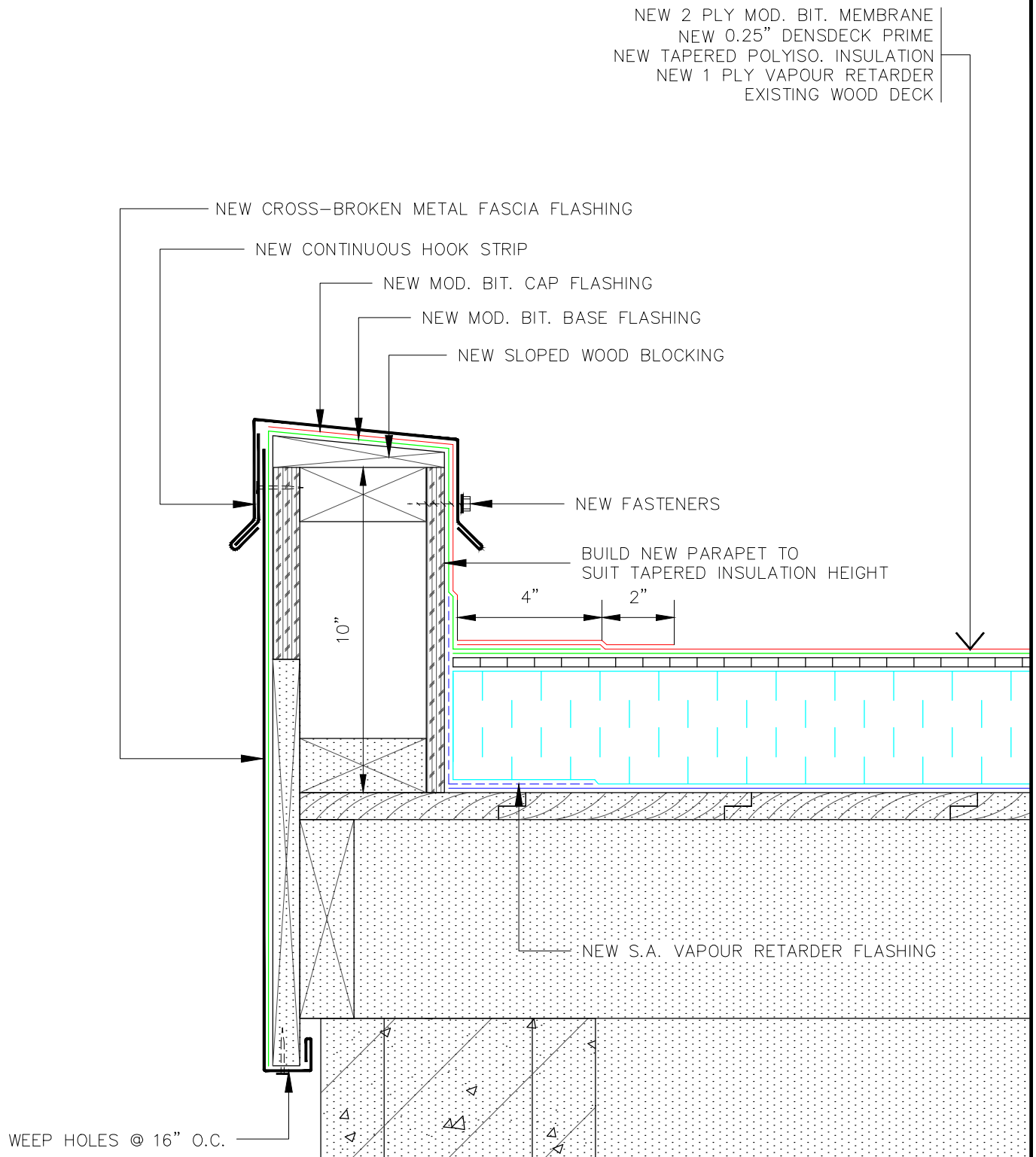
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R1

NORTH:



* NOT ALL COMPONENTS OR LAYERS ARE SHOWN FOR CLARITY



TITLE:

PARAPET DETAIL

REVISED:

SCALE: 3" = 1'-0"

REV'N.#:

DATE:

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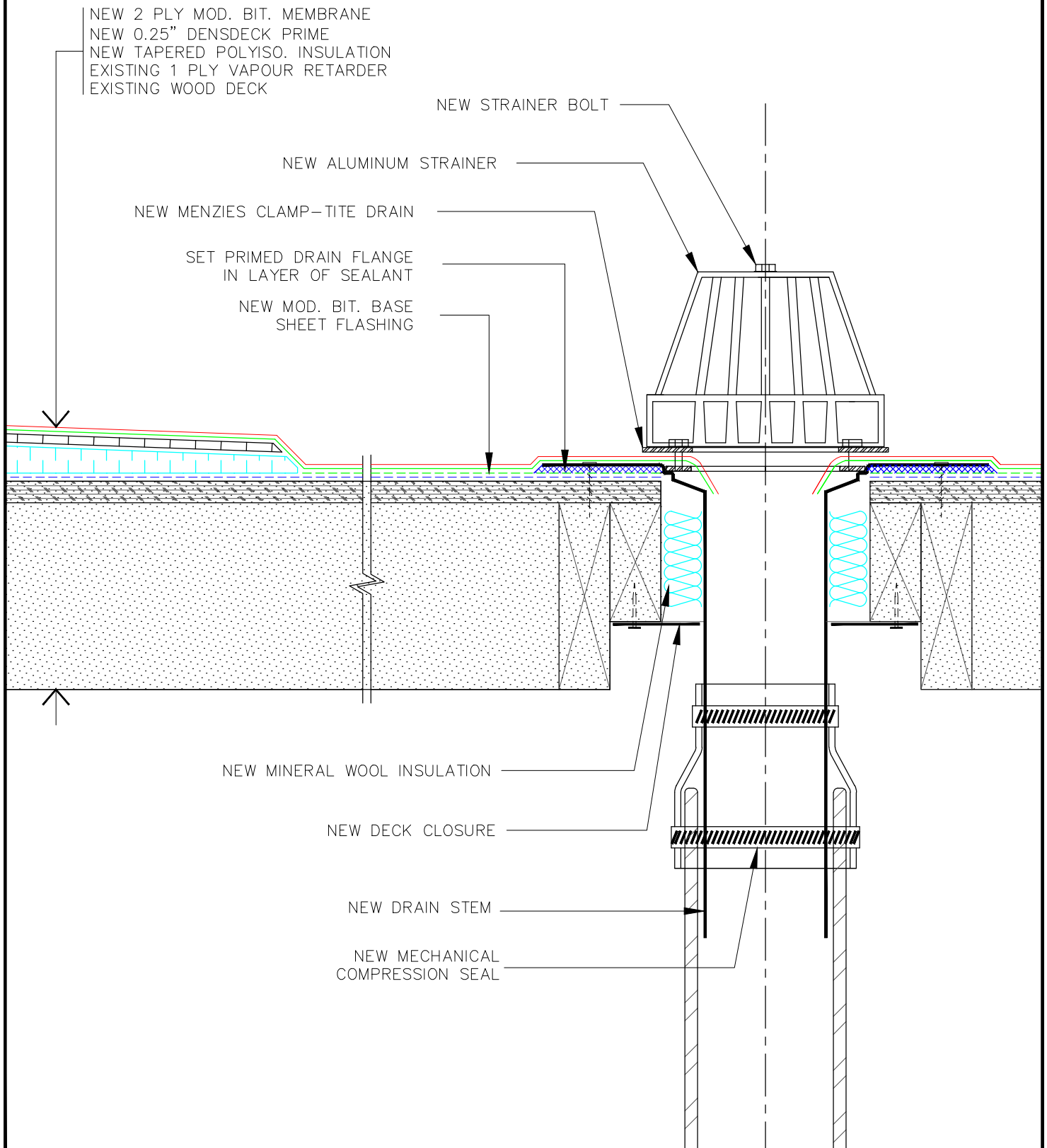
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VPMM347

CHK. BY: D.W./J.M.

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TITLE:

DRAIN DETAIL

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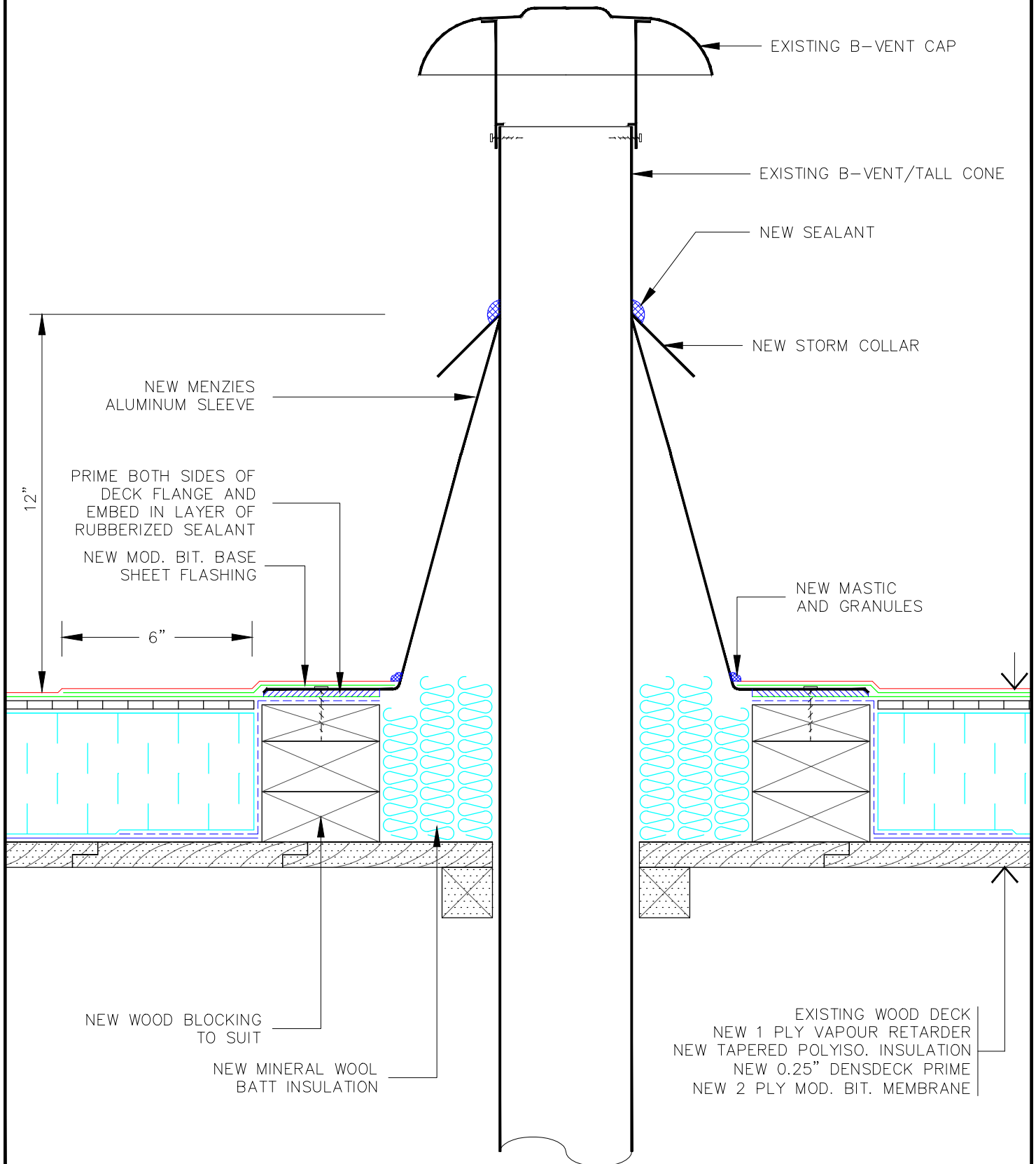
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CHK. BY: D.W./J.M.

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VDMM477

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TITLE:

B-VENT DETAIL

REVISED:

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DATE:

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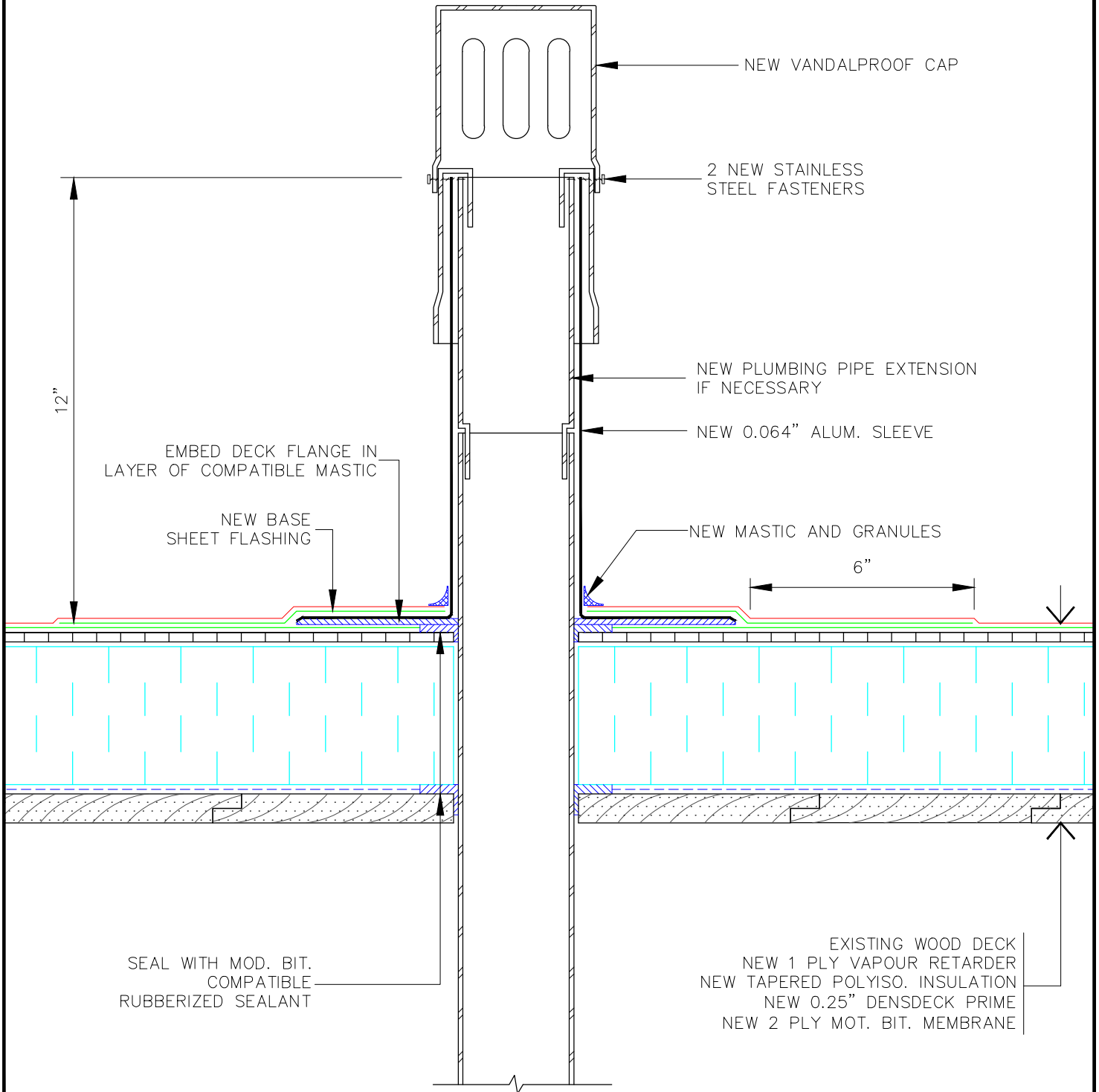
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CHK. BY: D.W./J.M.

DWG.#:

VSM022

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TITLE: PLUMBING STACK DETAIL

REVISED:

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DATE:

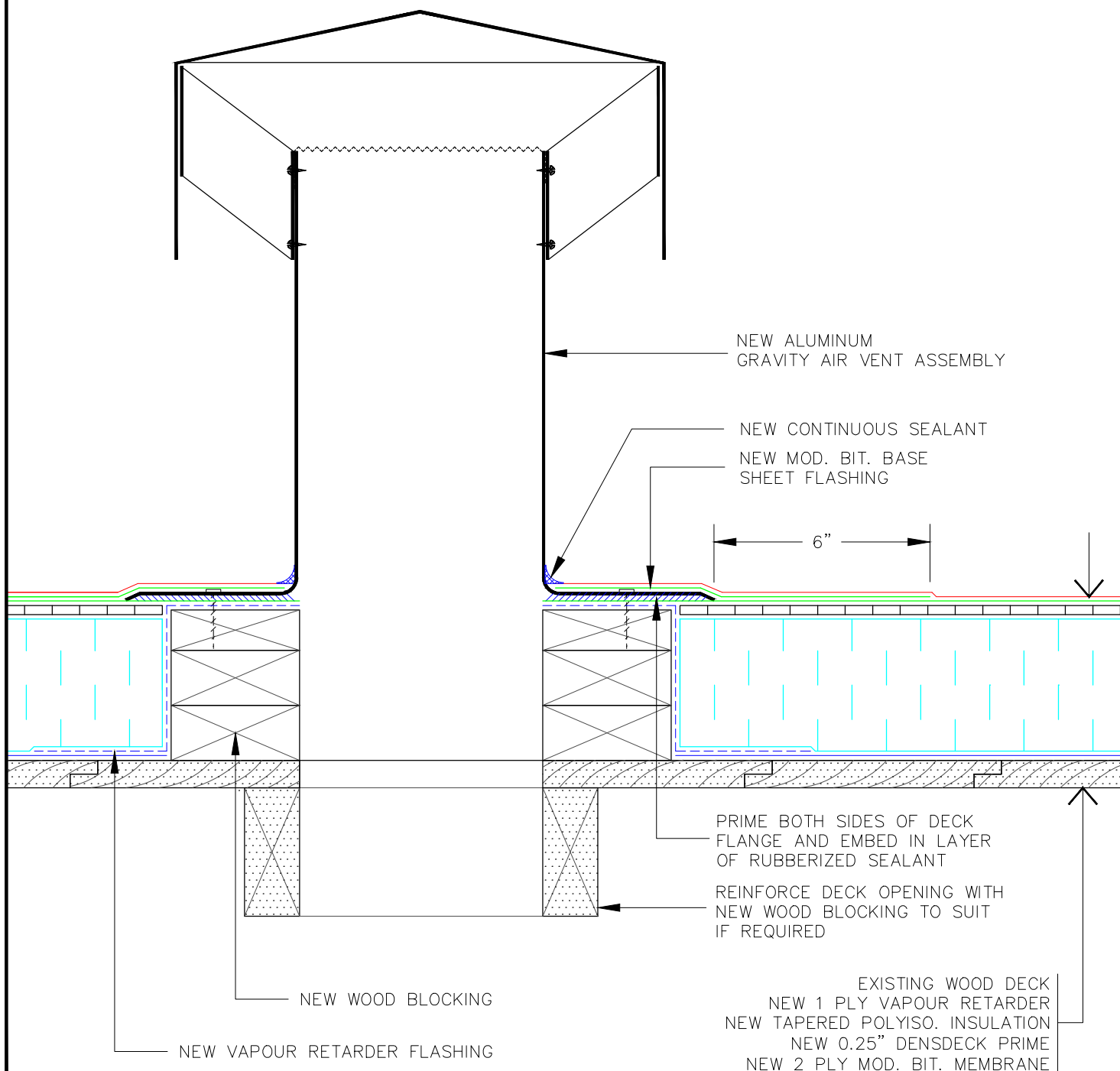
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DRN. BY: B.W.

DWG. #: VSMM023

CHK. BY: D.W./J.M.

* NOT ALL COMPONENTS OR LAYERS ARE SHOWN FOR CLARITY



TITLE:

GRAVITY AIR VENT

REVISÉ:

SCALE: $3'' = 1'-0''$

REV'N.#:

DATE:

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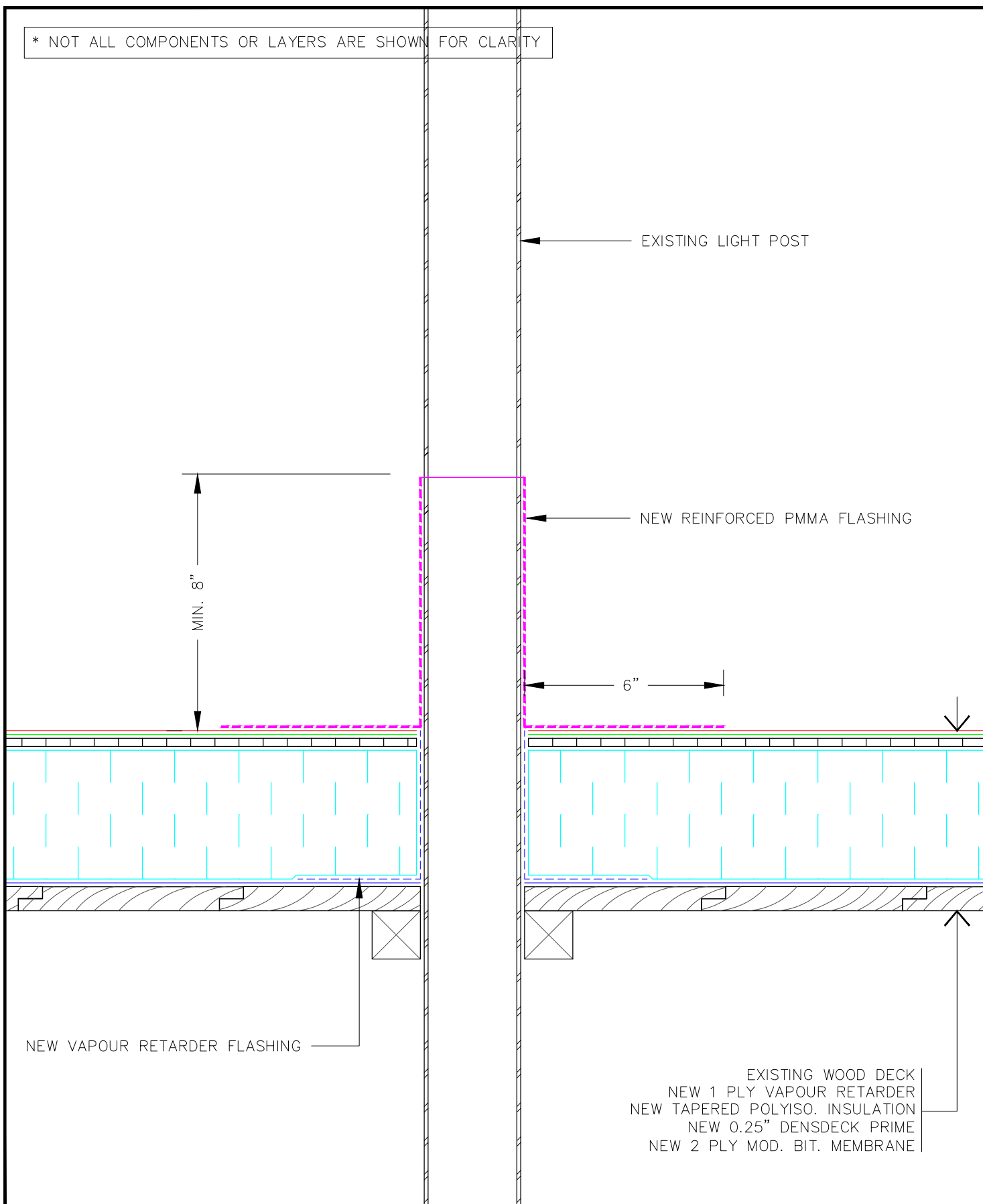
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DWG.#:

CHK. BY: D.W./J.M.

VSMM024

* NOT ALL COMPONENTS OR LAYERS ARE SHOWN FOR CLARITY



TITLE: PIPE PENETRATION DETAIL

REVISED:

SCALE: 3" = 1'-0"

REV'N. #:

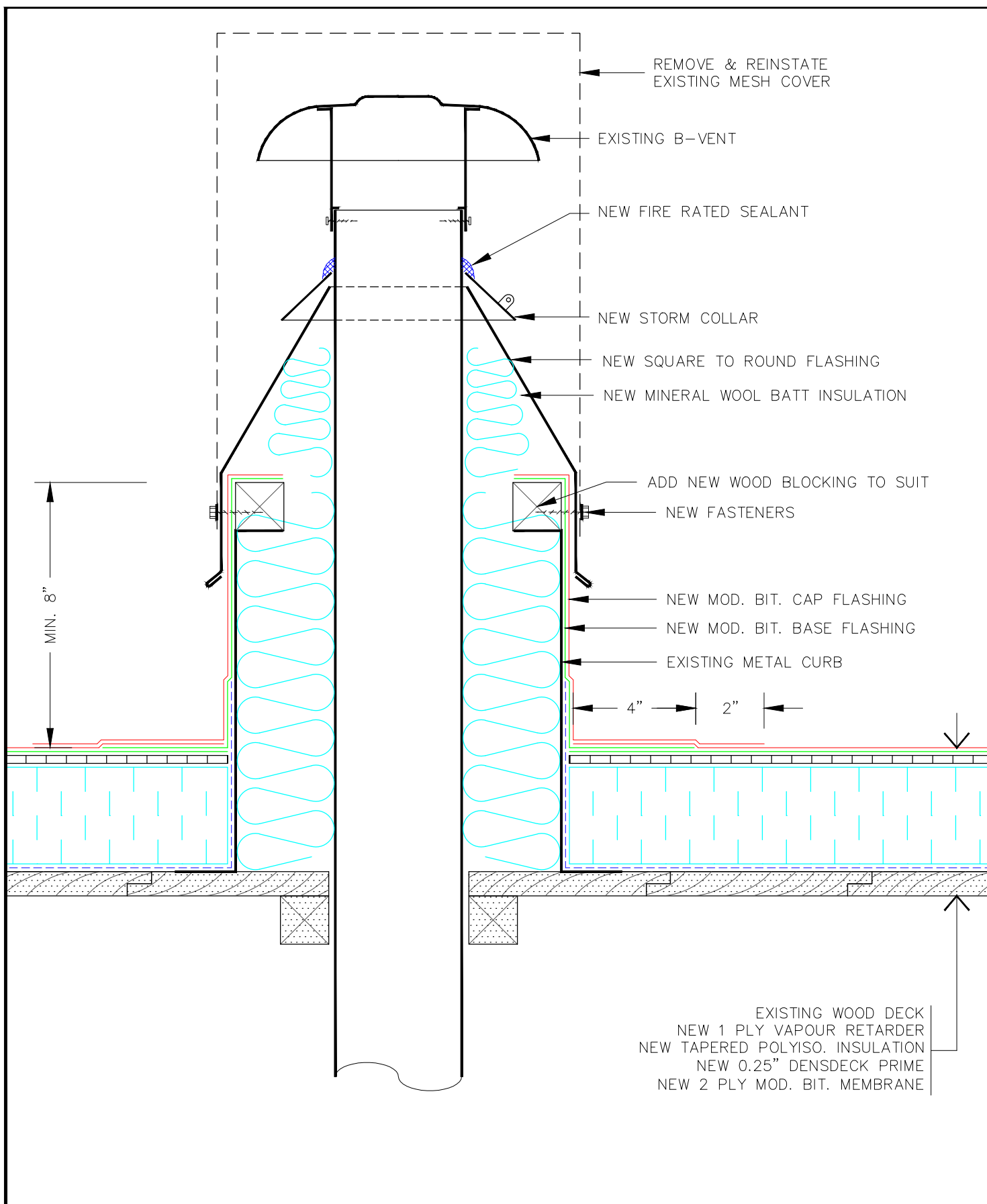
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DRN. BY: B.W.

DWG. #: VSMM025

CHK. BY: M.K./D.S.



EXISTING WOOD DECK
 NEW 1 PLY VAPOUR RETARDER
 NEW TAPERED POLYISO. INSULATION
 NEW 0.25" DENSDECK PRIME
 NEW 2 PLY MOD. BIT. MEMBRANE



TITLE:

B-VENT DETAIL

REVISED:

REV'N. #:

SCALE: 3" = 1'-0"

DATE:

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DRN. BY: B.W.

CHK. BY: D.W./J.M.

DWG. #:

VSMM026

**SCHEDULE B - APPENDIX 2-A
CONTRACT DRAWINGS - (PROJECT)**

Refer to Schedule B - Appendix 2 - Supplementary Specifications – (Project) for Contract Drawings and/or site photos, as applicable.

- END OF PAGE -

SCHEDULE B
APPENDICES 3 THROUGH 7

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

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

The following forms to be included at the time of the award of the contract:

- Appendix 6 Prime Contractor Designation
- Appendix 7 Contractor Health & Safety Expectations (Responsibility of Contractor(s))
- Appendix 8 City of Surrey, Project Completion Deliverables Worksheet



SCHEDULE C - QUOTATION

RFQ Title: Holly Pool Re-roofing

RFQ No: 1220-040-2018-103

Legal Name of Contractor: _____

Contact Person and Title: _____

Business Address: _____

Business Telephone: _____

Business Fax: _____

Business E-Mail Address: _____

TO:

City Representative: Richard D. Oppelt, Purchasing Manager

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

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 Contract;
 - (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 Contract and RFQ. Except as specifically modified by this Quotation, all terms, conditions, representations, warranties and covenants as set out in the Contract and RFQ will remain in full force and effect.
3. I/We have reviewed the sample Contract (Schedule B). If requested by the City, I/we would be prepared to enter into the sample Contract, 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 Contract 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 Contract, 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
1.	<p>The Contractor will provide all labour, materials, equipment and plant and all other relevant services necessary for the performance of the Work as stated in the specifications and drawings, at Holly Pool, 10662 - 148 Street. Surrey, BC V3R 3X6.</p> <p>Place of the Work location is: Holly Pool, 10662 - 148 Street, Surrey, BC V3R 3X6.</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> <p>Note: All Overhead costs, general conditions and profit are to be included in the above amount(s).</p>	\$_____
2.	Cash Allowances, if any.	
		\$
		\$
		\$
CURRENCY: Canadian		Subtotal: \$
		GST (5%): \$
		TOTAL QUOTATION PRICE: \$

List of Optional Prices:

9. The following is a list of Optional Price(s) to the Work and forms part of this RFQ, upon the acceptance of any or all of the Optional Price(s). The Optional 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 Optional Prices	Addition	Deduction
OP-1.	\$ []	\$ []
OP-2.	\$ []	\$ []

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. Performance Bond at 50% of total contract value: CCDC 221 (latest Preferred)	\$[]	\$[]
SP-2. Labour and Material Payment Bond at 50% of total contract value: CCDC 222 (latest Preferred)	\$[]	\$[]
SP-3. Provide to the Owner, the RGC RoofStar Ten (10) Year Guarantee. The cost of the RCABC Guarantee Administration Fees and Milestone Observation Reviews only are to be provided.	\$[]	\$[]
SP-4 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.	\$[]	\$[]
SP-5 Replacement of Wood Decking: Price to supply and install new decking boards (4'x8') to overlay damaged or deteriorated roof deck. Replacement to be endorsed by QA Observer.	\$[]	\$[]

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 for Services:

Labour Category	Straight Time/hr (Plus GST)	Overtime Rate/hr (Plus GST)
.1 Superintendent	\$	\$
.2 Foreman	\$	\$
.3 Journeyman	\$	\$
.4 Apprentice	\$	\$
.5 Skilled Labourer	\$	\$
.6	\$	\$
.7	\$	\$

Table 2 – Hourly Equipment Rate Schedule:

No.	Equipment Description <i>(State)</i>	Hourly Equipment Rate
		\$
		\$

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

12. Contractors 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:

- (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 (use the spaces provided and/or attach additional pages, if necessary).

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

Proposed Disposal Site: _____

Key Personnel & Subcontractors:

14. Contractors should 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. Contractors should 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: [Note: It is not necessary for the 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] (use the spaces provided and/or attach additional pages, if necessary):

<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 should provide information on their relevant **experience and qualifications** for the performance of the Work similar to those required by the Contract (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). 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 (use the spaces provided and/or attach additional pages, if necessary)

- END OF PAGE -

18. I/We the undersigned duly authorized representatives of the Contractor, having received and carefully reviewed the RFQ and the Contract, 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.

- ☐ 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 Contract, 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 Contract 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.: 1220-040-2018-103

Project Title and Site Location: Holly Pool Re-roofing
10662 - 148 Street, Surrey, BC V3R 3X6.

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 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.

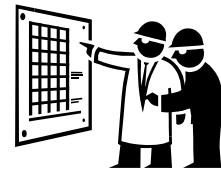
You can help ensure employee safety and your eligibility for future business with the City if you exhibit and practice a "Safe Work - Safe City" attitude.

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, 2015 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: _____

ATTACHMENT 4
Hazardous Materials Survey

By: 'Sure Hazmat and Testing'
Date of Report: October 15, 2018



SURE Hazmat and Testing

October 15, 2018

City of Surrey
Planning and Development
6651 148 Street, Surrey, BC
V3S 3C7

Attention – Clayton Welch – Project Coordinator

Reference: Pre-Renovation Building Materials Investigation
Holly Pool – 10662 148th Street, Surrey, BC

Sure Hazmat and Testing has, in accordance with your request, completed an investigation for hazardous materials and to identify any immediate hazards to workers during the renovation of the Holly Pool building located at 10662 148th Street in Surrey, BC.

The scope of our investigation was based on the client's renovation plans. The scope of the renovation is to remove and replace the roof of the pool building. Sampling was destructive in nature and included limited demolition of walls and floors to determine the presence of any concealed hazardous materials.

Representative samples of suspect asbestos-containing building materials were collected and analyzed. A total of six (6) samples were collected and analyzed for the presence of asbestos fibres. One (1) sample was collected and submitted for analysis of lead content. A visual inspection was conducted of thermostatic controls for the presence of mercury. A visual inspection was conducted for the presence of older light fixtures with suspect PCB-containing ballasts. A visual inspection was performed for evidence of rodent activity and fungal contamination.

Analytical Methodology

Asbestos

Samples were analyzed at the in-house laboratory of Sure Hazmat and Testing in accordance with the NIOSH 9002 PLM Bulk Sampling Analytical Method using polarized light microscopy and dispersion staining techniques. The detection limit of this method is listed as <1%. A copy of our Asbestos Bulk Results spreadsheet is attached to this report for your information and records. All records should be retained for a period of ten years as required by WorkSafe BC.

All samples will be stored at our laboratory for two months before being disposed of. Should you wish to keep these samples beyond this, please notify us within this period.

Lead-Based Finishes

Suspect leaded paint finishes were submitted to Maxxam Analytics for analysis of lead content. For leaded paint finishes, samples were digested using nitric acid/hydrogen peroxide followed by analysis using Inductively Coupled Plasma Spectroscopy (ICAP) and/or Inductively Coupled Plasma/Mass Spectroscopy (ICPMS).

The federal *Hazardous Products Act* (HPA) under Surface Coating Materials regulation defines leaded paint or lead-based surface coating materials with a total lead concentration of 0.009% or 90 µg/g. This is the current accepted standard by WorkSafe BC for identification of lead-based paint. Paint finishes that contain lead equal to or greater than 90 µg/g are considered to present a risk to pregnant women & children and a risk assessment must be conducted by a qualified person prior to the performance of any work that impacts lead-based paint finishes in work areas with high risk individuals in adjacent occupied areas.

Asbestos-Containing Material Results

Please refer to attached bulk sample results and sample location drawings for specific sample locations.

No asbestos-containing materials were identified in the scope of work.

Non-Asbestos Material Results

The following materials were sampled and determined to be non-asbestos:

- Torch on membrane roofing (SBS)
- Fibreboard and mastic
- Tar paper beneath metal flashing
- Caulking on perimeter metal flashings

Lead-Based Finish Results

Suspect leaded paint finishes were sampled from the renovation area. Table 1 shows the concentration of lead in paint for these samples.

Table 1 – Paint Sample Results

Sample #	Sample Location	Lead Concentration (µg/g)	HPA Standard Level (µg/g)	Condition
L01	Brown metal flashing paint	59	90	Good

Note: Bold values exceed standard level

The concentration of lead was below the Health Canada & HPA standard level of 90 µg/g for the metal flashing paint.

Other Hazardous Materials

No Fungal contamination was observed within the building.

No suspect PCB-containing components were observed or suspected to be present.

No Mercury-vapour fluorescent light tubes were observed in the scope.

No Rodent droppings were observed in the scope.

Silica is one of the most common hazards on a construction site. Cutting, breaking, crushing, drilling, grinding, or blasting concrete or stone releases dust that can expose workers to airborne silica.

Conclusions and Recommendations

Asbestos & Lead

No asbestos-containing materials or lead-based finishes were identified within the scope of work.

The survey was based on the client's renovation scope of work. If the scope of the renovation changes to include any areas or materials not included in this investigation, Sure Hazmat and Testing should be contacted to investigate prior to disturbance.

Silica and Nuisance Dusts

Control measures must be implemented on all job sites where demolition or renovation activities are taking place. An exposure control plan (ECP) must be developed to reduce the risk of silica and nuisance dust exposure for workers. Engineering controls must be applied to avoid or modify operations which have the potential to generate significant quantities of hazardous dusts. Controlled work practices such as the use of water and ventilation equipment serve to reduce the amount of respirable dust in the work environment. Personal protective equipment such as respiratory protection provide protection for workers on the site.

Limitations

This report is intended for the exclusive use of the client to determine the likely locations of hazardous materials prior to planned renovations. This report is compliant with WorkSafeBC section 20.112 for the scope of the renovation only. For a full building demolition additional inspection(s) and destructive sampling is required. **This report is not a Specification or Scope of Work and the use of this document as such will be at the sole risk of the user.**

The contents of this report were based on a site visit conducted by Sure Hazmat and Testing personnel. Please note that some asbestos products may not have been accessible on the day of our survey and may remain unidentified. Asbestos products are sometimes used behind wall partitions, on mechanical systems located in pipe chases, in sub-floors or other concealed areas, and assumptions have been made as to the likely contents of those areas. Should a suspect material be encountered, all work must be stopped and Sure Hazmat will investigate immediately.

If further clarification is required, please contact our office. Thank you for having Sure Hazmat and Testing perform this work for you.

Prepared by:



Ryan Verhelst, B.Sc, *Project Manager*
Sure Hazmat and Testing

Reviewed by:



John Shaw, *Principal*
Sure Hazmat and Testing

Encl. Laboratory Bulk Report
 Maxxam Analytics Lab Report
 Sample Location Drawings

Ref: 13634-R04



SURE Hazmat and Testing

101-4268 Lozells Avenue
Burnaby, B.C.
Tel: 604.444.0204

Bulk Asbestos Results

Client: 13634 - City of Surrey

Sampled By/ Date: R. Verhelst - October 4, 2018

Reference: Holly Pool - 10662 148th Street, Surrey, BC

Sample #	Date Analyzed	Analyst	Sample Location	Material Type	Other Materials glass, synthetics, cellulose	Asbestos Type & Amount
13634-D01	9-Oct-18	IW	Roof Top Layer	Torch on Membrane Mastic	Non-Fibrous 70% Other Fibres <30% Non-Fibrous 95% Other Fibres <5%	Non-Detected Non-Detected
13634-D02	9-Oct-18	IW	Roof Bottom Layer	Fibreboard Mastic	Non-Fibrous 40% Other Fibres <60% Non-Fibrous 95% Other Fibres <5%	Non-Detected Non-Detected
13634-D03	9-Oct-18	IW	Roof - Upper Wall Under Metal Flashing	Tar Paper Mastic	Non-Fibrous 10% Other Fibres <90% Non-Fibrous 95% Other Fibres <5%	Non-Detected Non-Detected
13634-D04	9-Oct-18	IW	Roof - Perimeter Flashing	Caulking	Non-Fibrous 95% Other Fibres <5%	Non-Detected
13634-D05	9-Oct-18	IW	Roof - Perimeter Flashing	Caulking	Non-Fibrous 95% Other Fibres <5%	Non-Detected
13634-D06	9-Oct-18	IW	Roof - Perimeter Flashing	Caulking	Non-Fibrous 95% Other Fibres <5%	Non-Detected



Lab #193144

Sure Hazmat and Testing is an active participant of the American Industrial Hygiene Association (AIHA) Bulk Asbestos Proficiency Analytical Testing (BAPAT)

Your Project #: CITY OF SURREY
Site Location: HOLLY POOL
Your C.O.C. #: 554114-69-01

Attention: Ryan Verhelst

Sure Hazmat & Testing
101-4268 Lozells Avenue
BURNABY, BC
CANADA V5A 0C6

Report Date: 2018/10/09

Report #: R2631881

Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B886950

Received: 2018/10/04, 16:30

Sample Matrix: PAINT
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Elements by ICP-AES (acid extr. solid)	1	2018/10/05	2018/10/09	BBY7SOP-00018	EPA 6010c R3 m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing. Maxxam is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Maxxam, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Your Project #: CITY OF SURREY
Site Location: HOLLY POOL
Your C.O.C. #: 554114-69-01

Attention: Ryan Verhelst

Sure Hazmat & Testing
101-4268 Lozells Avenue
BURNABY, BC
CANADA V5A 0C6

Report Date: 2018/10/09
Report #: R2631881
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B886950

Received: 2018/10/04, 16:30

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Nahed Amer, Project Manager
Email: NAmer@maxxam.ca
Phone# (604) 734 7276

=====

This report has been generated and distributed using a secure automated process.

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B886950
Report Date: 2018/10/09

Sure Hazmat & Testing
Client Project #: CITY OF SURREY
Site Location: HOLLY POOL
Sampler Initials: RV

ELEMENTS BY ATOMIC SPECTROSCOPY (PAINT)

Maxxam ID		UM2676		
Sampling Date		2018/10/04		
COC Number		554114-69-01		
	UNITS	L01-BROWN FLASHING PAINT	RDL	QC Batch
Total Metals by ICP				
Total Lead (Pb)	mg/kg	59.0	2.0	9173602
RDL = Reportable Detection Limit				

Maxxam Job #: B886950
Report Date: 2018/10/09

Sure Hazmat & Testing
Client Project #: CITY OF SURREY
Site Location: HOLLY POOL
Sampler Initials: RV

GENERAL COMMENTS

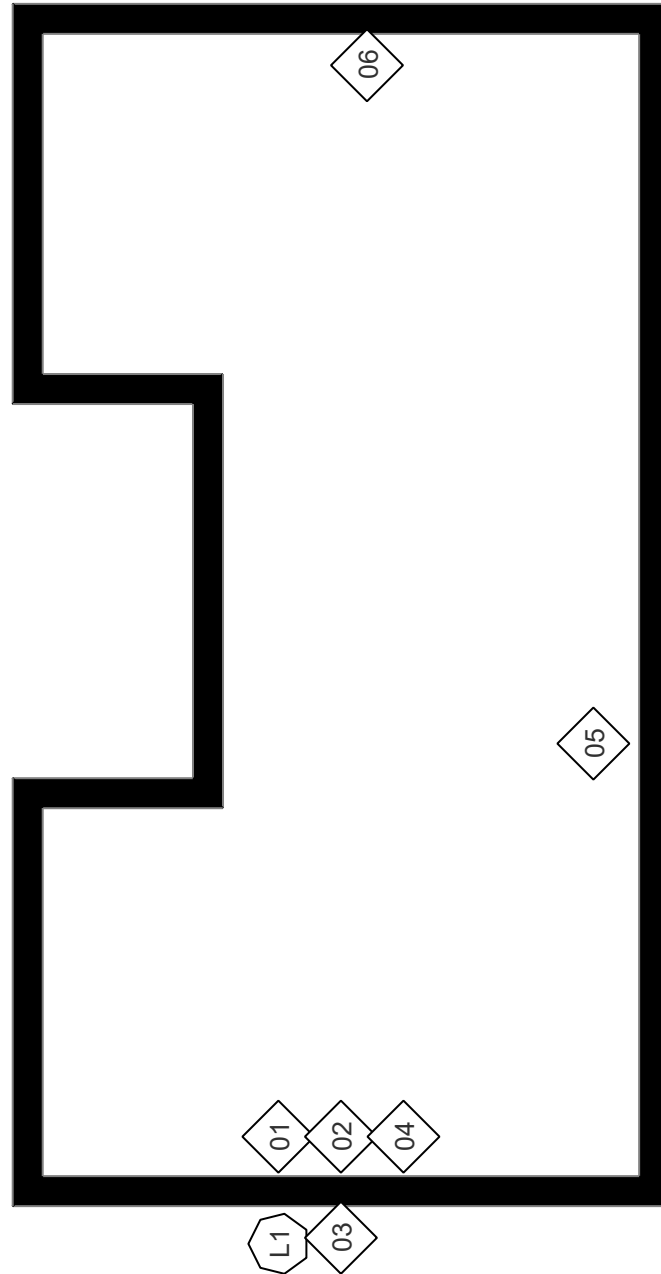
Results relate only to the items tested.

Maxxam Job #: B886950
Report Date: 2018/10/09

QUALITY ASSURANCE REPORT

Sure Hazmat & Testing
Client Project #: CITY OF SURREY
Site Location: HOLLY POOL
Sampler Initials: RV

QC Batch	Parameter	Date	Method Blank		RPD		QC Standard	
			Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
9173602	Total Lead (Pb)	2018/10/09	<2.0	mg/kg	199 (1)	40	88	70 - 130
<p>Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.</p> <p>QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.</p> <p>Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.</p> <p>(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.</p>								



Legend	
	Asbestos Sample
	Lead Sample

Holly Pool - Roof