



Sunshine Coast Regional District

Request for Proposal

Number: 18 358

for

Roof Replacement for Frank West Hall & Cliff Mahlman Fire Hall

Issue Date:

December 12, 2018

Closing Date of

January 22, 2019 at 3:00 PM local time

MANDATORY SITE MEETING: A mandatory site meeting will be held on Wednesday January 9, 2019 at 10:00 am local time at 1224 Chaster Road in Gibsons, BC

CONTACT: Enquiries related to this RFP, including any requests for information or clarification may only be directed in writing purchasing@srcd.ca and the Regional District will respond if time permits before the Closing Time. Information obtained from any other source is not official and should not be relied upon. Enquiries and any responses providing new information will be recorded and posted to BC Bid or otherwise distributed to prospective Proponents.

The cut-off for submitting any questions related to this Proposal should be received by 3:00 p.m. five (5) business days prior to the closing date. Questions received after this time may not be answered.

DELIVERY OF PROPOSALS: Proposals must be in English and must be submitted using one of the submission methods below, and must either (1) include a copy of this cover page that is signed by an authorized representative of the Proponent or (2) be submitted by using the e-bidding key on BC Bid (if applicable), in accordance with the requirements set out in the RFP.

BC Bid Electronic Submission: Proponents may submit an electronic proposal using BC Bid. Proposals must be submitted in accordance with the BC Bid requirements and e-bidding key requirements (found at www.bcbid.ca). Only pre-authorized electronic bidders registered on the BC Bid system can submit an electronic proposal using the BC Bid system. Use of an e-bidding key is effective as a signature.

OR

Hard Copy Submission: Proponents must submit **ONE (1)** hard-copies and **ONE (1)** electronic copy on a USB Drive of its proposal. Proposals submitted by hard copy must be submitted by hand or courier to:

**Sunshine Coast Regional District
1975 Field Road
Sechelt, BC
V0N 3A1**

Regardless of submission method, proposals must be received before Closing Time to be considered.

A proposal is deemed to incorporate the Confirmation of Proponent's Intent to Be Bound below, without alteration.

CONFIRMATION OF PROPONENT'S INTENT TO BE BOUND:

The enclosed proposal is submitted in response to the referenced Request for Proposals, including any Addenda. By submitting a proposal the Proponent agrees to all of the terms and conditions of the RFP including the following:

- The Proponent has carefully read and examined the entire Request for Proposals;
- The Proponent has conducted such other investigations as were prudent and reasonable in preparing the proposal; and
- The Proponent agrees to be bound by the statements and representations made in its proposal.

PROONENT NAME (please print): _____

NAME OF AUTHORIZED REPRESENTATIVE (please print): _____

SIGNATURE OF AUTHORIZED REPRESENTATIVE: _____

DATE: _____

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1. GENERAL TERMS & CONDITIONS

1.1 DEFINITIONS

Throughout this Request for Proposals, the following definitions apply:

"Addenda" means all additional information regarding this RFP, including amendments to the RFP;

"BC Bid" means the BC Bid website located at www.bcbid.ca;

"Closing Location" includes the location or email address for submissions indicated on the cover page of this RFP, or BC Bid, as applicable;

"Closing Time" means the closing time and date for this RFP as set out on the cover page of this RFP;

"Contract" means the written agreement resulting from the RFP executed by the Regional District and the successful Proponent;

"Contractor" means the successful Proponent to the RFP who enters into a Contract with the Regional District;

"Must", or **"mandatory"** means a requirement that must be met in order for a proposal to receive consideration;

"Proponent" means a person or entity (excluding its parent, subsidiaries or other affiliates) with the legal capacity to contract, that submits a proposal in response to the RFP;

"Proposal" means a written response to the RFP that is submitted by a Proponent;

"Request for Proposals" or **"RFP"** means the solicitation described in this document, including any attached or referenced appendices, schedules or exhibits and as may be modified in writing from time to time by the Regional District by Addenda; and **"Should"**, **"may"** or **"weighted"** means a requirement having a significant degree of importance to the objectives of the Request for Proposals.

"SCRD or Regional District" means Sunshine Coast Regional District.

1.2 FORM OF PROPOSAL

This Proposal must be completed in its entirety. Failure to properly complete this Proposal form may cause your Proposal to be rejected. The signing officer must initial all corrections. The Sunshine Coast Regional District (Regional District) reserves the right to permit a correction, clarification or amendment to the Proposal or to correct minor errors and irregularities.

1.3 ORAL OR ELECTRONIC PROPOSAL

Oral, email or faxed Proposals will not be accepted. It is the Proponents sole responsibility to ensure that the Proposal and the number of copies are received on time, in the form requested and at the proper location. Proposals received after the closing time will be returned, unopened.

For electronic submissions (BC Bid), the following applies:

- (a) The Proponent is solely responsible for ensuring that the complete electronic Proposal, including all attachments, is received before Closing Time;
- (b) Only pre-authorized e-bidders registered on BC Bid can submit electronic bids on BC Bid. BC

Bid is a subscription service (\$150 per year) and the registration process may take two business days to complete. If using this submission method, Proponents should refer to the BC Bid website or contact BC Bid Helpdesk at 250-387-7301 for more information. An electronic proposal submitted on BC Bid must be submitted using the e-bidding key of an authorized representative of the Proponent. Using the e-bidding key of a subcontractor is not acceptable.

1.4 SIGNATURE REQUIRED

Proposals must be properly signed by an officer, employee or agent having authority to bind the Proponent by that signature.

1.5 CLARIFICATIONS, ADDENDA & MINOR IRREGULARITIES

If any Proponent finds any inconsistencies, errors or omissions in the proposal documents or requires information, clarification of any provision contained therein, they shall submit their query in writing or email, addressed as follows:

Purchasing Division
Sunshine Coast Regional District
1975 Field Road, Sechelt, BC V0N 3A1
purchasing@scrd.ca

Any interpretation of, addition to, deletions from or any corrections to the proposal documents will be issued as written addendum by the Regional District.

All Addenda will be posted on BC Bid. It is the sole responsibility of the Proponent to check for Addenda on BC Bid. Proponents are strongly encouraged to subscribe to BC Bid's email notification service to receive notices of Addenda.

1.6 WITHDRAWAL OR REVISIONS

Proposals may be withdrawn by written notice provided such a notice of withdrawal is received prior to the closing date and time. Proposals withdrawn will be returned to the Proponent unopened. Revisions to the proposals already received shall be submitted only by facsimile, electronic mail, or signed letter. The revision must state only the amount by which a figure is to be increased or decreased, or specific directions as to the exclusions or inclusion of particular words.

1.7 CONDUCT OF THE CONTRACT

Unless otherwise specified within this document, any queries regarding this Request for Proposal are to be directed to Purchasing@scrd.ca. No other verbal or written instruction or information shall be relied upon by the Bidder, nor will they be binding upon the Regional District.

1.8 CONFLICT OF INTEREST/NO LOBBYING

- (a) A Proponent may be disqualified if the Proponent's current or past corporate or other interests, or those of a proposed subcontractor,

may, in the Regional District's opinion, give rise to an actual or potential conflict of interest in connection with the services described in the RFP. This includes, but is not limited to, involvement by a Proponent in the preparation of the RFP or a relationship with any employee, contractor or representative of the Regional District involved in preparation of the RFP, participating on the evaluation committee or in the administration of the Contract. If a Proponent is in doubt as to whether there might be a conflict of interest, the Proponent should consult with the Regional District Contact prior to submitting a proposal. By submitting a proposal, the Proponent represents that it is not aware of any circumstances that would give rise to a conflict of interest that is actual or potential, in respect of the RFP.

- (b) A Proponent must not attempt to influence the outcome of the RFP process by engaging in lobbying activities. Any attempt by the Proponent to communicate, for this purpose directly or indirectly with any employee, contractor or representative of the Regional District, including members of the evaluation committee and any elected officials of the Regional District, or with the media, may result in disqualification of the Proponent.

1.9 INDEMNITY

The Proponent must indemnify and save harmless the Regional District, its employees, Board Members and agents from any loss, claim (including any claim of infringement of third-party intellectual property rights), damage award, action, cause of action, cost or expense that the Regional District or any of the Regional District's employees, Board Members or agents may sustain, incur, suffer or be put to at any time, either before or after this agreement ends, to the extent the loss is directly or indirectly caused or contributed to by:

- (a) any act or omission by the Proponent or by any of the Proponent's agents, employees, officers, directors or Subcontractors in connection with this agreement; or
(b) any representation or warranty of the Proponent being or becoming untrue or incorrect.

1.10 SUSTAINABLE PROCUREMENT

The Regional District adheres to its sustainable policy and considers Proposals not only on the total cost of services, but Proposals that addresses the environment and social factors.

1.11 ENVIRONMENTAL RESPONSIBILITY

The Regional District is committed to preserving the environment. Proponents shall provide environmentally sensitive products or services wherever possible. Where there is a requirement that the Proponent supplies materials, and where such materials may cause adverse effects, the Proponent shall indicate the nature of the hazard in its submissions. The Proponent agrees to advise the Regional District of any known alternatives or

substitutes for such materials that would mitigate the effects of any adverse condition of the environment.

1.12 INVOICING AND PAYMENT

Unless otherwise agreed, the Regional District payment terms are Net 30 days following receipt of services or approved invoices, whichever is later. Original invoices are to be forwarded to the account payable department of the Regional District. The purchase order number assigned by the Regional District must be stated on the invoice otherwise payment may be delayed.

1.13 PRICING, CURRENCY AND TAXES

Offered prices are to be attached as a price schedule in Canadian dollars with taxes stated separately when applicable.

1.14 IRREVOCABLE OFFER

This Proposal must be irrevocable for 90 days from the Proposal closing date and time.

1.15 TIME IS OF THE ESSENCE

Time shall be of the essence in this contract.

1.16 ASSIGNMENT

The Proponent will not, without written consent of the Regional District, assign or transfer this contract or any part thereof.

1.17 OWNERSHIP OF DOCUMENTS & FREEDOM OF INFORMATION

All documents submitted in response to this Request for Proposal shall become the property of the Regional District and as such will be subject to the disclosure provisions of the Freedom of Information and Protection of Privacy Act. For more information on the application of the Act, go to http://www.cio.gov.bc.ca/cio/priv_leg/index.page.

1.18 AWARD OF CONTRACT

The Purchasing Policy at the Regional District offers contracts to businesses through an open, fair and consistent competitive bidding process. This ensures that the Regional District will receive the best overall value for the goods and services it requires. The Regional District reserves the right to cancel, award all or part of the scope of work described in this document to a single Proponent or may split the award with multiple Proponents.

All awards are subject to Board approval that meets the needs as determined by the Board. The Regional District, in receipt of a submission from a Proponent, may in its sole discretion consider the Proponent to have accepted the terms and conditions herein, except those expressly excluded or changed by the Proponent in writing.

The RFP shall not be construed as an agreement to purchase goods or services. The lowest priced or any proposal will not necessarily be accepted. The RFP does not commit the Regional District in any way to award a contract.

1.19 COST OF PROPOSAL

The Proponent acknowledges and agrees that the Regional District will not be responsible for any costs, expenses, losses, damage or liability incurred by the Proponent as a result of or arising out of submitting a Proposal for the proposed contract or the Regional District's acceptance or non-acceptance of their proposal. Further, except as expressly and specifically permitted herein, no Proponent shall have any claim for any compensation of any kind whatsoever, as a result of participating in this RFP, and by submitting a proposal each Proponent shall be deemed to have agreed that it has no claim.

1.20 PROPONENT'S RESPONSIBILITY

It is the Proponent's responsibility to ensure that the terms of reference contained herein are fully understood and to obtain any further information required for this proposal call on its own initiative. The Regional District reserves the right to share, with all proponents, all questions and answers related to this bid call.

1.21 EVALUATIONS

Proposals will be evaluated in private, including proposals that were opened and read in public, if applicable. Proposals will be assessed in accordance with the evaluation criteria.

If only one Proposal is received, the Regional District reserves the right to open the Proposal in private or if the total bid price exceeds the estimated budget for the Contract, the Regional District may cancel and re-tender, accept, not accept and cancel or re-scope the Work seeking a better response, with or without any substantive changes being made to the solicitation documents. If more than one Proposal is received from the same Proponent, the last Proposal received, as determined by the Regional District, will be the only Proposal considered.

1.22 ACCEPTANCE OF TERMS

The submission of the Proposal constitutes the agreement of the Proponent that all of the terms and conditions of the RFP are accepted by the Proponent and incorporated in its Proposal, except those conditions and provisions which are expressly excluded and clearly stated as excluded by the Proponent's proposal.

1.23 MANDATORY REQUIREMENTS

Proposals not clearly demonstrating that they meet the mandatory requirements will receive no further consideration during the evaluation process.

1.24 INSURANCE & WCB

The Proponent shall obtain and continuously hold for the term of the contract, insurance coverage with the Regional District Listed as "Additional Insured" the minimum limits of not less than those stated below:

- (a) Commercial General Liability – not less than \$2,000,000 per occurrence

- (b) Motor Vehicle Insurance, including Bodily Injury and Property Damage in an amount no less than \$2,000,000 per accident from the Insurance Corporation of British Columbia on any licensed motor vehicles of any kind used to carry out the Work.

- (c) A provision requiring the Insurer to give the Owners a minimum of 30 days' notice of cancellation or lapsing or any material change in the insurance policy;

The Proponent must comply with all applicable laws and bylaws within the jurisdiction of the work. The Proponent must further comply with all conditions and safety regulations of the Workers' Compensation Act of British Columbia and must be in good standing during the term of any contract entered into from this process.

1.25 COLLUSION

Except otherwise specified or as arising by reason of the provisions of these documents, no person, or corporation, other than the Proponent has or will have any interest or share in this proposal or in the proposal contract which may be completed in respect thereof. There is no collusion or arrangement between the Proponent and any other actual or prospective Proponent in connection with proposals submitted for this project and the Proponent has no knowledge of the context of other proposals and has no comparison of figures or agreement or arrangement, express or implied, with any other party in connection with the making of the proposal.

1.26 CONFLICT OF INTEREST

Proponents shall disclose in its Proposal any actual or potential conflict of interest and existing business relationship it may have with the Regional District, its elected or appointed officials or employees.

1.27 LIABILITY FOR ERRORS

While the Regional District has used considerable efforts to ensure an acute representation of information in these bid documents, the information contained is supplied solely as a guideline for Proponents. The information is not guaranteed or warranted to be accurate by the Regional District nor is it necessarily comprehensive or exhaustive.

1.28 TRADE AGREEMENTS

This RFP is covered by trade agreements between the Regional District and other jurisdictions, including the following:

- a) Canadian Free Trade Agreement; and
- b) New West Partnership Trade Agreement.

1.29 LAW

This contract and any resultant award shall be governed by and construed in accordance with the laws of the Province of British Columbia, which shall be deemed the proper law thereof.

1.30 FORCE MAJEURE (ACT OF GOD)

Neither party shall be liable for any failure of or delay in the performance of this Agreement for the period that such failure or delay is due to causes beyond its reasonable control including but not limited to acts of God, war, strikes or labour disputes, embargoes, government orders or any other force majeure event. The Regional District may terminate the Contract by notice if the event lasts for longer than 30 days.

1.31 CONFIDENTIALITY

Responses submitted in confidence shall be so honoured. The Regional District will not release to the public any specific information regarding any submitted responses except as may be required under law. To request documentation confidentiality, Bidders are requested to submit a covering letter, with their submission, detailing the specifics of their request. Confidentiality cannot be fully guaranteed as all submissions are subject to the *Freedom of Information and Protection of Privacy Act*. Bidders will treat all information received through this RFP process and subsequent contract award, as confidential. The Bidder agrees that any information, knowledge (including but not necessarily limited to business practices, techniques, relationships, agreements, etc.), data, research, and any other information, knowledge, materials or products disclosed to the Bidder by the Regional District or otherwise produced, developed or known by the Bidder in providing this service (collectively the "Confidential Information") will not publish or disclose to any third party not either during or after the Agreement except as otherwise authorised by the Regional District. This section shall survive the termination of this Agreement.

1.32 DISPUTE RESOLUTION

All unresolved disputes arising out of or in connection with this Proposal or in respect of any contractual relationship associated therewith or derived therewith shall be referred to and finally resolved by arbitration as prescribed by Mediate BC services pursuant to its rules, unless otherwise mutually agreed between the parties.

1.33 DEBRIEFING

At the conclusion of the RFP process, all Proponents will be notified. Proponents may request a debriefing meeting with the Regional District.

1.34 SUBCONTRACTING

- a) Unless the RFP states otherwise, the Regional District will accept proposals where more than one organization or individual is proposed to deliver the services described in the RFP, so long as the proposal identifies the lead entity that will be the Proponent and that will have sole responsibility to deliver the services under the Contract. The Regional District will enter into a Contract with the Proponent only. The evaluation of the Proponent will include evaluation of the resources and experience of proposed subcontractors, if applicable.

- b) All subcontractors, including affiliates of the Proponent, should be clearly identified in the proposal.
- c) A Proponent may not subcontract to a firm or individual whose current or past corporate or other interests, may, in the Regional District's opinion, give rise to an actual or potential conflict of interest in connection with the services described in the RFP. This includes, but is not limited to, involvement by the firm or individual in the preparation of the RFP or a relationship with any employee, contractor or representative of the Regional District involved in preparation of the RFP, participating on the evaluation committee or in the administration of the Contract. If a Proponent is in doubt as to whether a proposed subcontractor might be in a conflict of interest, the Proponent should consult with the Regional District Contact prior to submitting a proposal. By submitting a proposal, the Proponent represents that it is not aware of any circumstances that would give rise to a conflict of interest that is actual or potential, in respect of the RFP.
- d) Where applicable, the names of approved subcontractors listed in the proposal will be included in the Contract. No additional subcontractors will be added nor other changes made to this list in the Contract without the written consent of the Regional District.

1.35 PERMITS AND LICENSES

The Contractor shall obtain all permits, licenses, approvals and certificate which, as of the tender closing date and time, are generally required for the performance of the Work (collectively the "contractor permits"). Contractor Permits shall include all municipal construction permits and approvals. The Contractor shall pay all Contractor permit fees.

1.36 BID BOND

The tender must be accompanied by a tender security ("Bid Security") in the form of a bid bond issue by a surety licensed to carry on the business of suretyship in British Columbia in a form reasonable satisfactory to the Regional District or a certified cheque or bank draft or letter of credit in a form acceptable to the Owner in the amount equal to 10% of the tender price.

1.37 PERFORMANCE BOND

Within 15 days of receipt of the written notice of award, the successful Proponent will deliver to the Regional District a performance bond and a labour and material bond, each in the amount of 50% of the contract price, covering the performance of the work including the successful Proponent's obligations during the maintenance period, issued by a surety licensed to carry on the business of suretyship in the province of British Columbia and in a form acceptable to the Regional District; or

A bank draft, in the amount of 20% of the total contract price. The bank draft less 5% of the total contract price will be returned 60 days after substantial performance which will be held until the end of the two year warrantee period; or

A letter of credit, in the amount of 20% of the total contract price, without a termination date. The letter of credit will be returned 60 days after substantial performance and after the issuance of a letter of credit for the warrantee period, without a termination date in the amount of 5% of the total contract price which will be held until the end of the two year warrantee period.

1.38 HOLDBACK

Invoices are subject to a holdback, the Regional District shall hold back 10%, or other percentage as required by the Builders Lien Act, of any amounts due to the Contractor as a builder's lien holdback. No interest or other charges shall accrue on any amounts retained.

1.39 SUBSTANTIAL PERFORMANCE

The successful Proponent shall advise the Regional District when the work has reached substantial performance and shall review all completed work with the Regional District for the purposes of final inspection, deficiencies and commissioning. Any deficiencies identified the successful Proponent is required to provide the Regional District with a reasonable time period for the correction. The Regional District will provide acknowledgment of those corrections and time frame. The Regional District will conduct further inspections.

1.40 HOLDBACK RELEASE

The Regional District shall pay any builders lien holdbacks as required by the Builders Lien Act, or on such other dates as required by law but the Regional District may hold back the amounts for any deficiencies of filed builder's liens. The successful Proponent will provide the Regional District with a written request for its release, with a clearance letter from the Workers' Compensation Board, a certification of Substantial Performance and/or any written report confirming the satisfaction from the Regional District that all monies owing to the successful Proponent's workers, subcontractors, material and equipment suppliers and government agencies have been satisfactorily paid.

1.41 WARRANTY & GUARANTEES

Unless otherwise specified by the Contractor, the Contractor warrants and agrees that the goods and/or services set out in the order are and shall be supplied or manufactured in a good and skillful manner and in the case the goods that they are derived from the best materials available.

If within warranty period the goods and/or services or any portion thereof are found by the Regional District to be defective or faulty due to imperfect or bad construction or material, the Contractor agrees to replace such defective goods and/or services forthwith without expense to the Regional District. The Contractor warrants that its employees have the qualifications, experience, knowledge skills and abilities necessary for the fulfillment of the Contract(s).

1.42 CLEANUP

The successful Proponent will maintain the site in a clean and orderly condition.

Upon attaining Substantial Performance, the successful Proponent shall remove all surplus products, tools, construction machinery and equipment relating to the work that is not required for the performance of the remaining work. The successful Proponent shall also remove waste, debris and waste products other than that cause by the Regional District or other Contractors, and leave the place of work clean and suitable for occupancy by the Regional District unless otherwise specified in the contract documents or directed.

If the successful Proponent fails or refused to remove all such products, materials, equipment and waste within a reasonable time after achieving Substantial Performance, the Regional District will issue a written notice to the Successful Proponent to remedy such failure or refusal by providing a reasonable time, the Regional District may do or cause to be done the removal and all reasonable resulting costs incurred by the Regional District may be deducted from any amounts owing to the successful Proponent.

2. INTRODUCTION

2.1 Purpose

The Regional District is seeking a Contractor to provide roof replacement services on designated roof areas at Frank West Hall / Cliff Mahlman Fire Hall located at 1224 Chaster Road, Gibsons, BC V0N 1V4.

3. SITUATION/OVERVIEW

3.1 Scope

The Roofing Contractor to provide all labour, equipment and material necessary to perform the completion of the Work as describe in this Appendix 1 for the Replacement on designated roof areas of Frank West Hall & Cliff Mahlman Fire Hall, locate at 1224 Chaster House Road, Gibsons BC V0N 1V4.

Appendix 1 details out the requirements of the project and includes the following:

- a) 01 00 00 General Requirements;
- b) 01 11 00 Summary of Work;
- c) 01 35 23 Health & Safety;
- d) 01 56 00 Temporary Barriers & Enclosures;
- e) 02 41 19 Selective Demolition;
- f) 06 10 00 Rough Carpentry;
- g) 07 61 13 Prefinished Metal Roofing;
- h) 07 62 00 Prefinished Gutters and Downspouts; and
- i) 07 92 00 Joint Sealants.

3.2 Mandatory Site Meeting

Regional District staff will be available on site (1224 Chaster Road in Gibsons, BC) for a mandatory site meeting on Wednesday January 9, 2019 at 10:00 am local time.

3.3 Tentative Schedule of Activities

ITEM:	DATE:
RFP Issue:	December 12, 2018
Mandatory Site Meeting:	January 9, 2019
Tender Close:	January , 2019
Contract Award:	February 2019
Substantial Completion:	July 21, 2019

4. CONTRACT

4.1 General Contract Terms and Conditions

Proponents should review carefully the terms and conditions set out in the CCDC 2 Stipulated Price Contract 2008 including the Schedules. The Contract terms can be found in Appendix 4.

4.2 Service Requirements

The Contractor's responsibilities will include the following:

- a) Replacement of the Roof at Frank West Hall & Cliff Mahlman Fire Hall.
- b) Warranty Services.

5. REQUIREMENTS

In order for a proposal to be considered, a Proponent must clearly demonstrate that they meet the mandatory requirements set out in Section 7.1 (Mandatory Criteria) of the RFP.

This section includes "Response Guidelines" which are intended to assist Proponents in the development of their proposals in respect of the weighted criteria set out in Section 7.2 of the RFP. The Response Guidelines are not intended to be comprehensive. Proponents should use their own judgement in determining what information to provide to demonstrate that the Proponent meets or exceeds the Regional District's expectations.

Please address each of the following items in your proposal in the order presented. Proponents may find it helpful to use the individual Response Guidelines as headings for proposal responses.

5.1 Capabilities

5.1.1 Relevant Experience

Proponents should provide evidence of previous successful performance in comparable work. The proponent should provide complete information on experience of key personnel to be involved in the work and references from work on similar projects

5.1.2 Safety Precautions

The Contractor will take particular care to ensure the safety of children, employees, and the general public while working on the project.

5.1.3 References

Proponents **must** provide a minimum of **5** references (i.e. names and contact information) of individuals who can verify the quality of work provided specific to the relevant experience of the Proponent and of any subcontractors named in the proposal. References from the Proponent's own organization or from named subcontractors are not acceptable.

The Regional District reserves the right to seek additional references independent of those supplied by the Proponent, including internal references in relation to the Proponent's and any subcontractor's performance under any past or current contracts with the Regional District or other verifications as are deemed necessary by it to verify the information contained in the proposal and to confirm the suitability of the Proponent.

5.1.4 Qualifications

Proponents **must** provide a list of qualifications and experience for all key personnel and subcontractors who will be performing the services (i.e. Name, Company Name Qualifications, and years of experience)

5.1.5 Warranty

Proponents **need** to provide detailed information regarding warranty, this should include type, length and coverage details. The Proponent should indicate whether the RCABC RoofStar Guarantee will be provided.

5.2 Approach

5.2.1 Required Equipment

Proponents **need** to provide a list of equipment required to perform the services.

Proponents **should** use Schedule 'B' List of Equipment.

5.2.2 Project Schedule

Proponents **need** to provide a details project schedule for completing the work that indicates which resources will be applied to achieve the project goals.

Proponents **should** use Schedule 'C' Project Schedule.

5.3 Price

Proponents need to submit a fee proposal that sets out the separate costs of each project described as well as an all-inclusive cost for all the projects; the proposal should include a breakdown of the fix prices including time, travel, hourly billable rates and material costs.

Prices quoted will be deemed to be:

- a) in Canadian dollars ;
- b) inclusive of duty, FOB destination, and delivery charges where applicable; and
- c) exclusive of any applicable taxes.

Proponents **must** use Schedule 'A' Tender Form.

6. PROPOSAL FORMAT

Proponents should ensure that they fully respond to all requirements in the RFP in order to receive full consideration during evaluation.

The following format, sequence, and instructions should be followed in order to provide consistency in Proponent response and ensure each proposal receives full consideration. All pages should be consecutively numbered.

- a) Signed cover page (see section 7.1 Mandatory Criteria).
- b) Table of contents including page numbers.
- c) A short (one or two page) summary of the key features of the proposal.
- d) The body of the proposal, including pricing, i.e. the "Proponent Response".
- e) Appendices, appropriately tabbed and referenced.
- f) Identification of Proponent (legal name)
- g) Identification of Proponent contact (if different from the authorized representative) and contact information.
- h) Bid Bond

7. EVALUATION

Evaluation of proposals will be by a committee formed by the Regional District and may include other employees and contractors.

The Regional District's intent is to enter into a Contract with the Proponent who has met all mandatory criteria and minimum scores (if any) and who has the highest overall ranking.

Proposals will be assessed in accordance with the entire requirement of the RFP, including mandatory and weighted criteria.

The Regional District reserves the right to be the sole judge of a qualified proponent. The Evaluation Committee may, at its discretion, request clarifications or additional information from a Proponent with respect to any Proposal, and the Evaluation Committee may make such requests to only selected Proponents. The Evaluation Committee may consider such clarification or additional information in evaluating a Proposal.

The evaluation will be confidential and no totals, scores or price will be provided to any Proponent

7.1 Mandatory Criteria

Proposals not clearly demonstrating that they meet the following mandatory criteria will be excluded from further consideration during the evaluation process.

Mandatory Criteria
The proposal must be received at the Closing Location before the Closing Time.
The proposal must be in English.
The proposal must be submitted using one of the submission methods set out on the cover page of the RFP
The proposal must either (1) include a copy of the cover page that is signed by an authorized representative of the Proponent or (2) be submitted by using the e-bidding key on BC Bid (if applicable), in accordance with the requirements set out in the RFP

7.2 Weighted Criteria

Proposals meeting all of the mandatory criteria will be further assessed against the following weighted criteria.

Weighted Criteria	Weight (%)
Qualifications & Experience	20
References	20
Project Schedule(include start date, milestones and completion date)	10
Warranty:	10
RCABC RoofStar Guarantee (Optional)	10
Price	30
TOTAL	100

7.3 Price Evaluation

The lowest priced Proposal will receive full points for pricing. All other prices will be scored using the following formula: lowest priced proposal/price of this proposal* total points available for price

SCHEDULE A Tender Form

APPENDIX "A" – LIST OF TENDER DOCUMENTS

Project Title:	Roof Replacement
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Worksite:	Frank West Hall / Cliff Mahlman Fire Hall
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Address:	1224 Chaster Road, Gibsons, BC, V01 1V4
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The following is the list or description of the Tender Documents provided and referred to in the Bid Requirements for the above named and identified Project.

Project Manual:

- 00 41 00 - Tender Form
- 01 00 00 - General Requirements
- 01 11 00 - Summary of Work
- 01 35 23 - Health and Safety
- 01 56 00 - Temporary Barriers and Enclosures
- 02 41 19 - Selective Demolition and Removal
- 06 10 00 - Rough Carpentry
- 07 62 00 - Sheet Metal Flashing and Trim
- 07 92 00 - Joint Sealants

Drawings:

- R1 - Roof Plan

Details:

- VMLI092 - Sloped Metal Roof Eave Detail
- VMLI093 - Sloped Metal Roof Hip Detail
- VMLI094 - Sloped Metal Roof Valley Detail
- VMLI095 - Sloped Metal Roof Ridge Detail
- VMLI096 - Rake Edge Detail
- VRLL024 - Step Detail
- VRLL025 - Sloped Metal Roof Wall Detail
- VSLI014 - Electric Conduit Pipe Detail
- VSLI015 - Electric Conduit Pipe at Hip Detail

Addenda:

Issued before Tender Closing Date

APPENDIX “C” – STIPULATED PRICE BREAKDOWN

Project Title:	Roof Replacement
Worksite:	Frank West Hall / Cliff Mahlman Fire Hall
Address:	1224 Chaster Road, Gibsons, BC, V01 1V4

The following itemized list is a breakdown of our Stipulated Price to perform the Work. The itemized prices quoted include the specified cost, overhead, profit, and any applicable taxes in force at the date of tender with the exception of the Goods and Services Sales Tax (GST). The GST is shown as a separate line item.

Item No.	Description of Work	Estimated Quantity	Unit Rate	Contractor's Total Bid
1.0	Roof Replacement – Metal Roofing:			
1.1	Roof Area (RA) 1.1	Lump Sum	N/A	\$ _____
2.0	Stipulated Price:			
2.1	Subtotal (Total of Itemized Bid Prices):			\$ _____
2.2	Goods and Services Sales Tax (GST):			\$ _____
2.3	Total Stipulated Price (Item 2.1 + 2.2):			\$ _____

Notes:

1. At Owner's discretion, the Scope of Work may be altered to suit Owner's requirements.
2. If required by Owner, successful Bidder should be prepared to submit a further price breakdown of identified items.
3. ALL quantities and measurements to be confirmed by Contractor to own satisfaction from on-site take-offs.
4. Costs above include provision and co-ordination of all locates to determine location of all services necessary to perform work.

APPENDIX “D” – SEPARATE PRICES

Project Title: Roof Replacement

Worksite: Frank West Hall / Cliff Mahlman Fire Hall

Address: 1224 Chaster Road, Gibsons, BC, V01 1V4

The following table contains our list of Separate Prices to perform specific parts of the Work which are not included in the Stipulated Price and are to be added to the Contract Price. The itemized prices quoted include the specified cost, overhead, profit, and any applicable taxes in force at the date of tender with the exception of the Goods and Services Sales Tax (GST). The GST is shown as a separate item.

Item No.	Description of Work	Subtotal	G.S.T.	Contractor's Total Bid
D1	Price to replace existing wood fascia, barge board, and box ends with new materials, primed and painted to match existing materials.	\$ _____	\$ _____	\$ _____
D2	Price to provide the Owner the RCABC RGC RoofStar Ten (10) Year Guarantee.	\$ _____	\$ _____	\$ _____

Notes:

1. At Owner's discretion, the Scope of Work may be altered to suit Owner's requirements.
2. If required by Owner, successful Bidder should be prepared to submit a further price breakdown of identified items.
3. ALL quantities and measurements to be confirmed by Contractor to own satisfaction from on-site take-offs.
4. Costs above include provision and co-ordination of all locates to determine location of all services necessary to perform work.

APPENDIX “E” – ALTERNATE PRICES

Project Title:	Roof Replacement
Worksite:	Frank West Hall / Cliff Mahlman Fire Hall
Address:	1224 Chaster Road, Gibsons, BC, V01 1V4

The following table contains our list of Alternate Prices to modify and substitute select parts of the Work as specified. Alternate Price to be the net difference from the Stipulated Price and to be added to the Contract Price. All Credit Prices to be shown in brackets. The itemized prices quoted include the specified cost, overhead, profit, and any applicable taxes in force at the date of tender with the exception of the Goods and Services Sales Tax (GST). The GST is shown as a separate item.

Item No.	Description of Work	Subtotal	G.S.T.	Contractor's Total Bid
		\$ _____	\$ _____	\$ _____
		\$ _____	\$ _____	\$ _____
		\$ _____	\$ _____	\$ _____

Notes:

1. At Owner's discretion, the Scope of Work may be altered to suit Owner's requirements.
2. If required by Owner, successful Bidder should be prepared to submit a further price breakdown of identified items.
3. ALL quantities and measurements to be confirmed by Contractor to own satisfaction from on-site take-offs.
4. Costs above include provision and co-ordination of all locates to determine location of all services necessary to perform work.

APPENDIX “F” – UNIT PRICES

Project Title: Roof Replacement

Worksite: Frank West Hall / Cliff Mahlman Fire Hall

Address: 1224 Chaster Road, Gibsons, BC, V01 1V4

The following itemized list contains our Unit Prices to perform select parts of the Work as specified and are to be added to the Contract Price. The itemized prices quoted include the specified cost, overhead, profit, and any applicable taxes in force at the date of tender with the exception of the Goods and Services Sales Tax (GST). The GST is shown as a separate item.

Item No.	Description of Work	Subtotal	G.S.T.	Contractor's Total Bid
F1	Unit Price to supply and install new fascia to replace and match identified damaged existing fascia boards.	\$ _____/bdft	\$ _____/bdft	\$ _____/bdft
F2	Unit Price to supply and install specified sheathing to replace and match unforeseen damaged / wet existing sheathing.	\$ _____/sqft	\$ _____/sqft	\$ _____/sqft

Notes:

1. At Owner's discretion, the Scope of Work may be altered to suit Owner's requirements.
2. Payment on Unit Price Items to be based on actual quantity of Work performed as measured on site jointly with the Consultant and Contractor. Disputes arising from quantity variation to be resolved using CCDC 4-2008 mechanisms.

END OF SECTION - 00 41 00

SCHEDULE B List of Equipment

Project Title: Roof Replacement

Worksite: Frank West Hall / Cliff Mahlman Fire Hall

Address: 1224 Chaster Road, Gibsons, BC, V01 1V4

The following are the Subcontractors we propose to use for project. (If prelisted item not used, strikeout and initial the space below)

EQUIPMENT	DESCRIPTION	AGE OF EQUIPMENT
Roll Forming Machine Model # _____		

Appendix 1 Specifications

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 Sunshine Coast Regional District 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 Contract 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 Sunshine Coast Regional District, 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 "Observer" is an independent Quality Assurance Agency appointed by the Owner to observe performance of work.
- .9 "Place of Work" means designated location or site where contracted work is to be performed.
- .10 "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.
- .11 "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 local government taxes.
- .2 Provide authorities having jurisdiction with information when and as requested.
- .3 Pay fees and obtain certificates and permits including building permit.
- .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 to 18:00, Monday through Saturday, and Sundays from 9:00 AM to 18:00, unless otherwise approved by Owner.
 - .2 Follow local government 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 tender close.
 - .2 Limited parking may be provided on site, unless specified otherwise in Instructions to Bidders, 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.
 - .4 Cooperate with Owner in scheduling operations to minimize conflict and to facilitate Owner usage, including maintaining continuous (24/7) vehicle access/egress to East fire hall bay overhead door (South elevation) and through to Chaster Road, and two East elevation man doors.
- .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 Project 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 Local government 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 local government 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.

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.

2. PART 2 - PRODUCTS (NOT USED)

3. PART 3 – EXECUTION (NOT USED)

END OF SECTION - 01 00 00

1. 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:
- .2 Roof Replacement on designated roof areas of: Frank West Hall & Cliff Mahlman Fire Hall, located at 1224 Chaster Road, Gibsons, BC, V01 1V4.
- .3 Contract Documents to be reviewed in their entirety with all sections, including Division 1- General Requirements, to be considered interrelated and form part of this section.

1.2 PROJECT SCHEDULE

- .1 Contractor to mobilize his forces and trades to commence work on site as soon as possible after Award of Contract, weather permitting.
- .2 Substantial Completion of Work to be completed by July 21, 2019.

1.3 EXAMINATION OF DRAWINGS, SPECIFICATIONS, AND WORKSITE

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

1.4 BID PRICING

- .1 Provide a breakdown of Stipulated Lump Sum Price as itemized and indicated on Bid Form under Appendix “C” - Stipulated Price Breakdown.
 - .1 Replacement of Steep Slope Roof Area 1.1: Price to perform new replacement roof system installation over top of prepared decking with a new metal roofing system in accordance with Section 07 61 00 – Sheet Metal Roofing, including plywood sheathing overlay, new gutters and downspouts.
- .2 Provide Separate Prices as itemized and indicated on Bid Form under Appendix “D” - Stipulated Price Breakdown. Separate Prices are offered pricing from bidder for consideration from Owner, prices are not part of Bid price.
 - .1 Price to replace existing wood fascia, barge board, and box ends with new materials, primed and painted to match existing materials.
 - .2 Price to provide the Owner the RCABC RGC RoofStar Ten (10) Year Guarantee.
- .3 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 Bid Form in Appendix “F” – List of Unit Prices.
 - .1 Wood Fascia Replacement: Price to add to Contract to supply and install new matching primed and painted wood fascia as required replacing any damaged and/or deteriorated existing wood fascia, per board foot. Replacement of wood fascia to be endorsed by QA Observer.
 - .2 Wood Decking Replacement: Price to add to Contract to supply and install new matching wood strapping as required to replace any damaged and/or deteriorated existing wood decking, per square foot. Replacement of wood strapping to be endorsed by QA Observer.

1.5 OWNER OCCUPANCY

- .1 Owner will occupy premises during entire construction period for execution of normal operations.
- .2 Cooperate with Owner in scheduling operations to minimize conflict and to facilitate Owner usage, including maintaining continuous (24/7) vehicle access/egress to East fire hall bay overhead door (South elevation) and through to Chaster Road, and two East elevation man doors.

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 Site Plan showing locations of construction material storage, garbage dumpster, debris storage, roof access points, temporary washroom facilities and contractor vehicle parking.
- .2 Perform Work between hours of 7:00 AM to 18:00 hours, Monday through Saturday, and Sunday form 9:00 AM to 18:00. Consult with Client/Building Owner for special access times.

- .3 Temporary Barriers, enclosures and signage will be highly enforced given use of property.
 - .4 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.
 - .5 Obtain Construction/Building Permit and sidewalk/roadway occupation permits as required by local government.
 - .6 Determine nature and extent of all site services above and below grade prior to commencement of Work.
 - .7 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.
 - .8 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.
 - .9 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.
 - .10 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.
 - .11 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.
 - .12 Provide temporary support to existing structural and cladding components during performance of work if required.
 - .13 Install temporary protection for all materials and building components, which have been exposed during demolition/removals as specified.
 - .14 Dispose of all materials at landfill site authorized by authorities having jurisdiction.
 - .15 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 12.7mm (0.5") plywood.

1.9 SCOPE OF WORK: LOW SLOPE MEMBRANE ROOFING

- .1 On Roof Area 1.1: Supply and install all labour, plant, equipment, and materials to install a new metal roof system. New roof system to be in accordance with Section 07 61 00 and to include, but not be limited to, the following provisions.

- .1 Remove old roof down to existing wood strapping, and dispose of existing metal roof panels, underlayment roof membrane, projection and perimeter flashings, and old appurtenances to an appropriate site. Any materials able to be recycled should be sent to the appropriate agency. Metals are required to be recycled.
- .2 Review entire existing roof strapping with Consultant to identify areas requiring replacement. Consultant to be notified 48 hours prior to roof deck examination.
- .3 Repair and replace all damaged wood strapping, soffit and fascia. Prime and paint all new exposed and unprotected wood fascia boards.
- .4 Remove existing straps 610mm (24") away from eave toe board.
- .5 Install new polystyrene baffles at soffit intakes.
- .6 Reinstall straps.
- .7 Install new 12.7mm (0.5") plywood as described in Section 06 10 00 Rough Carpentry.
- .8 Prime all exposed wood, concrete, gypsum board and metal surfaces to receive new vapour retarder membrane and flashings.
- .9 Install new self-adhered membrane over all deck surfaces.
- .10 Install new metal roof panels with concealed fasteners and clips.
- .11 Install new metal rain gutters with adequate slope at all eave locations where indicated on drawings. Install new PVC down pipes required with heavy duty strapping. Determine suitable location for down pipes and drainage on site with Consultant.
- .12 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.

1.10 SCOPE OF WORK: REMOVAL OF HAZARDOUS MATERIALS

- .1 Design Authority has documentation indicating there is no asbestos present in the tested samples. Sheet metal flashing samples however indicate the presence of lead in the paint. Documentation will be provided to the successful bidder 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. Locate material and equipment compound minimum 40' away from buildings. 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 Cost of all warranties to be included in Bid Price.
 - .3 Cost of all Field Reviews to be paid by Owner.

2. PART 2 - PRODUCTS (NOT USED)

3. PART 3 - EXECUTION (NOT USED)

END OF SECTION - 01 11 00

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1. 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 Scaffold engineering plan(s) and certification (if scaffold being erected).

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 Ministry of Labour 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.

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 CAN/CSA Z271-10: Safety Code for Suspended Platforms.
 - .3 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.

2. PART 2 – PRODUCTS (NOT USED)

3. PART 3 – EXECUTION (NOT USED)

END OF SECTION - 01 35 23

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1. 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

1. 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 61 13 – Prefinished Metal Roofing

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).
 - .7 WorkSafe BC.

1.3 ASBESTOS AND DESIGNATED SUBSTANCES

- .1 Presence of lead based paints are confirmed as present in the sheet metal roof assembly.
- .2 Abatement procedures for Lead Containing Materials (LCM) pertinent to successful performance of Work to be paid for by the Contractor, as part of the base bid of the Contract.
 - .1 Removal of lead painted materials to be in compliance with current provincial lead paint abatement regulations for Place of Work.
- .3 Contractor is required to utilize an environmental consultant to review the abatement procedures, perform a minimum 1 field review, and review the disposal verification documents.
 - .1 Cost for Environmental Consultant services are to be paid by the Contractor.
- .4 Contractor is responsible for communications with the Environmental Consultant.
- .5 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 part of the base bid of the 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.
- .2 Record and discuss with Consultant any deviations from existing assumed conditions as indicated by drawings and/or specifications.

1.6 ABATEMENT CONTRACTORS

- .1 The following abatement contractors have acted in a capable manner on past projects, bidders are welcome to utilize their own recognized and licensed sub-trades.

- .1 Pro Active Hazmat & Environmental Ltd.

101-9295 198th Street
Langley BC, V1M 3J9
Phone: 778.298.2268

Fax: 778.298.2269

- .2 Enviro-Vac

8815 Harvie Road
Surrey, BC, V4N 4B9
Phone: 604.513.1324

Fax: 604.513.1325

- .3 ACTES Environmental

1631 Welch Street,

North Vancouver, B.C. V7P 3G9 Phone:
604.990.4258

Fax: 604.985.6293

1.7 REGULATORY REQUIREMENTS

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

1.8 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.

2. PART 2 - NOT USED

3. PART 3 - EXECUTION

3.1 PREPARATION

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

3.2 GENERAL PROTECTION

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

3.3 DEMOLITION SALVAGE AND DISPOSAL

- .1 Remove parts of existing structure or roof system to permit repairs or new installation. Sort materials into appropriate piles for recycling and or reuse.
- .2 Carry in Base Bid Price all costs to salvage, protect from harm, and re-use following components, unless indicated otherwise elsewhere in specifications:
 - .1 Existing skylights, mechanical equipment, cladding, stairs and ladders, satellite and communications equipment, electrical lines, and service lines, etc.
- .3 Refer to drawings and specifications for items identified for reuse or salvage, if applicable.
- .4 Remove items to be reused, store in a protected location, and reinstall under appropriate section of

specification.

- .5 Trim edges of partially demolished building elements to suit future use.
- .6 Include for disposal of removed materials to appropriate Landfill and/or recycling facilities, except where specified otherwise, and in accordance with authority having jurisdiction.
 - .1 Where possible, all existing recyclable materials, gravel, asphalt products, etc. to be transported to an appropriate recycling facility.
 - .2 Provide location of local facility receiving removed recyclable materials to Owner and Consultant.
- .7 Dispose of debris on a continuous basis. Do not stockpile debris in a manner which would overload structure, or impede access around site.

3.4 SEQUENCE OF OPERATION

- .1 Removal:
 - .1 Remove items as indicated in technical sections, including roofing ballast or gravel, metal roofing flashings, roofing membrane and flashings, roofing insulation, and or vapour retarder.
 - .1 Do not disturb items designated to remain in place.
 - .2 Restrict roofing demolition work to sections in limited size that will be restored and made watertight by end of working day.
 - .3 Use extreme caution when performing demolition work around skylights, sloped glazing, and other force and vibration sensitive roof projections.
- .2 Removal From Site:
 - .1 Interim removal of stockpiled material may be required, if it is deemed to interfere with operations of Owner.
 - .2 Do not overload existing roof structures.
- .3 Salvage:
 - .1 Carefully dismantle items containing materials for salvage and stockpile salvaged materials at locations acceptable to Owner and Consultant.
- .4 Disposal of Material:
 - .1 Dispose of materials not designated for salvage or reuse on site to be hauled to an authorized disposal site and / or recycling facilities.
- .5 Backfill:
 - .1 Backfill in areas as indicated.

3.5 ABANDONED AND UNUSED ITEMS

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

3.6 DECK REPAIRS

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

3.7 RESTORATION

- .1 Restore areas and existing works outside areas of demolition to match condition of adjacent, undisturbed areas.

- .2 Use only soil treatments and procedures which are not harmful to health, are not injurious to plants, and do not endanger wildlife, adjacent water courses or ground water.

3.8 CLEANUP

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

END OF SECTION - 02 41 19

1. 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 61 13 – Prefinished Metal Roofing
- .5 Section 07 62 00 – Sheet Metal Flashing and Trim
- .6 Section 07 62 13 – Prefinished Gutters and Downspouts

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.

2. 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 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.

.2 Do not treat Heart Redwood and Western Red Cedar.

.3 Treat other members specified as preservative treated (PT).

.4 Preservative treatment by pressure method to ASTM D1760; except any process involving use of prohibited Chromated Copper Arsenate (CCA) or Alkaline Copper Quaternary (ACQ).

.8 Fascia, Barge Boards and Box End Materials

.1 Exterior grade Douglas fir, sized to match existing conditions.

.2 Can be factory 6 side primed or primed on site, painted to match existing conditions, or as selected by Owner.

2.2 DECK SHEATHING

.1 Plywood:

.1 Material/Species: Douglas Fir or Spruce to CSA 0121, faces and backs to CAN/CSA- O325.0, and as per BC Building Code (latest edition)

.2 Board Size: Max. 1.22m (4') x 2.44m (8'). Minimum thickness 12.7mm thick (0.5") unless otherwise approved in writing by Consultant.

.3 Grade: Grade C face, Grade C back and inner plies.

.4 Finish: Sheathing (SHG), un-sanded and may contain a limited size knotholes and other defects.

.5 Acceptable Product:

.1 Exterior Plywood, DFP (SHG) by CWC or Certiwood.

.2 Consultant approved equivalent board.

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 Roof Sheathing Fasteners: Zinc coated hot dip steel, 8D or better, minimum shank of .131" with minimum length of 63.5mm (2.5") or suitable to penetrate into solid wood framing members by min. 38mm (1.5").
- .7 Anchorage of wood blocking to masonry: Masonry screws, Tapcon anchors of sufficient length to penetrate 32mm (1.25") into masonry surfaces.
- .8 Batt Insulation: Stone wool mineral fiber batt insulation, Rockwool by Roxul Inc.
- .9 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.

3. 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 Replace existing broken 1" x 4" strapping with new, if damage found during roof panel & underlay removal process.
- .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 ROOF SHEATHING & BLOCKING

- .1 Comply with requirements of local Building Codes:

- .1 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.
 - .2 Align and plumb faces of furring and blocking to tolerance of 1:600.
 - .3 Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other work.
 - .4 Install wood cants, fascia backing, nailers, curbs and other wood supports as required and secure with adequate fasteners.
- .2 Install polystyrene air baffles at eaves prior to plywood sheathing installation, and ensure soffits are open to air flow.
 - .3 Existing 1" x 4" strapping is spaced at approximately 16" o/c, and trusses at 24" o/c. New plywood sheathing is to be installed over, and secured to, the strapping. Spaces between strapping are to be filled in with additional strapping or new sheathing trimmed as necessary to provide edge support for the new overlay sheathing joints. Maximum allowable spacing of strapping is 200mm (8") between boards; all larger spaces are to be filled in with additional strapping.
 - .1 Direction of new sheathing may be either horizontal or vertical and joints are not required to be over supporting members, but are to be fully or intermittently supported by the strapping.
 - .2 Sheathing is to be installed parallel to strapping and perpendicular to the rafter direction.
 - .3 End joints of new sheathing are to be staggered by a minimum of 400mm (16") and spacing between sheathing is to be 2mm (3/32") on all sides.
 - .4 Minimum 8D nails are to be installed at 152mm (6") o/c at board edges, eave framing, gable framing, and ridge framing. Nails are to be installed at 304mm (12") spacing, evenly distributed to place 1 nail through the strapping and penetrate into the truss top chord, with 1 nail into the center of the strapping.
 - .5 Ensure board sides are fully supported by strapping, trim edges as necessary to maintain an evenly distributed load. H-Clips are not acceptable for this application.

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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1. PART 1 - GENERAL

1.1 DESCRIPTION

- .1 All conditions of Contract and General Requirements apply to this section.
- .2 All materials and equipment must be set up in a position satisfactory to Owner's representative.
- .3 All materials to be new and in perfect condition, free from defects which may impair strength, durability or appearance.
- .4 Scheduling of work to be discussed with, and be subject to approval of Owner.
- .5 All work to meet CGSB 93-GP-3M Standard, CSSBI Bulletin B9-83, SMACNA. Architectural Manual, RCABC Roof Practices Manual and good sheet metal practice.

1.2 SECTION INCLUDES

- .1 Prefinished metal roofing system over prepared substrate.
- .2 Existing roofing components and related appurtenances to be removed as specified in preparation for installation of a new low slope, snap lock concealed fastener metal roof system, including but not limited to:
 - .1 On Roof Area 1.1:
 - .1 Existing wood strapping, repaired as needed,
 - .2 New 12.7mm (.05") plywood overlay,
 - .3 New underlayment,
 - .4 New prefinished sheet steel roofing panels,
 - .5 New prefinished sheet steel roofing panels,

1.3 RELATED SECTIONS

Section 01 11 00 – Summary of Work

- .1 Section 01 56 00 – Temporary Barriers and Enclosures
- .2 Section 02 41 19 – Selective Demolition and Removal
- .3 Section 07 62 00 – Sheet Metal Flashing & Trim
- .4 Section 07 92 00 – Joint Sealants

1.4 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 ASTM A653/A653M – Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by Hot-Dip Process.
 - .2 ASTM A924/A924M – Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.

- .3 ASTM C1177/C1177M – Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
- .2 Canadian Standards Association (CAN/CSA):
 - .1 CSA-S136 – North America Specification for the Design of Cold Formed Steel Structural Members.
 - .2 CAN/CSA S269.2M – Access Scaffolding for Construction Purposes.
 - .3 CAN/ULC S107 – Standard Method of Fire Tests of Roof Coverings.
- .3 Canadian General Standards Board (CAN/CGSB):
 - .1 CAN/CSA-G164 – Hot Dip Galvanizing of Irregularly Shaped Articles.
- .4 SMACNA – Sheet Metal and Air Conditioning Contractors National Association – “Architectural Sheet Metal Manual”.
- .5 Canadian Roofing Contractors Association (CRCA) – Roofing Specifications Manual.
- .6 Roofing Contractors Association of BC (RCABC) – Roofing Manual.
- .7 CSSBI – Canadian Sheet Steel Building Institute.
- .8 National Research Council, Institute for Research in Construction reports No. B1040-1, B1040-2 and B1040-3.

1.5 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 Current WorkSafe BC Clearance Letter for Place of Work.
- .2 Provide to Quality Assurance Observer, at Prestart Meeting:
 - .1 Submittals as identified in other Sections, including but not limited to, Scope appropriate Notice of Project (NOP) filed with WorkSafe BC for Place of Work and documents related with OH Regulation 20.2 and if appropriate, OH Regulation 20.2.1.
 - .2 Finalized project work schedule listing start date, anticipated number of working days working, and manpower assignments for project.
 - .3 Safety Data Sheets (SDS) pertaining to all proposed materials to be used on site to perform Work.
 - .4 Contact list and phone numbers for anticipated project personnel and twenty-four (24) hour emergency contact numbers.
- .3 Shop drawings:
 - .1 Submit engineered shop drawings.
 - .2 Indicate dimensions, sheet metal profiles, attachment and anchoring materials and methods, trim and closure pieces, material finishes and colours, and related work.

- .3 Indicate methods to achieve watertight assembly, including sealants, penetration seals, drainage path of moisture from within assembly to exterior of envelope.
- .4 Structural Design Load Calculations
 - .1 Upon request submit for review all structural design calculations, certified by a Professional Engineer licensed to practice in the province of BC, upon award of the contract and prior to commencing installation.
- .5 Samples:
 - .1 Submit 610mm x 610mm (24" x 24") size samples of sheet metal materials, of each colour and profile specified for Owner approval before any fabrication or installation.
- .6 Maintenance Data
 - .1 Provide maintenance data for cleaning and maintenance of panel finishes for incorporation into manual.

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 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, is an independent Quality Assurance Observation Agency appointed by Owner to observe performance of roof 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 each phase of work will begin, at least forty-eight (48) hours prior to commencement of Work for phase.
 - .3 Arrange Final Observation and examination of installed roof with both Observer and Manufacturer's Technical Representative.
- .2 Cooperate with Observer and afford all facilities necessary to permit full Quality Assurance Observations during performance of Work. Act immediately on instructions given by Observer.
- .3 When required, provide roof cut-outs and samples in field where directed by Observer and make good without additional cost to Owner.
- .4 When initial tests and observations reveal work failing to meet contract requirements, pay for any additional testing and observations required by Observer or third party testing agency for correction of Work, without additional cost to Owner.
- .5 Copies of Q.A. Observation Reports to be issued by Observer to Owner and Prime Contractor.

1.8 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 Material and equipment is not to be stored on the upper low slope roof areas.
- .3 Deliver and store materials to manufacturer's instructions and follow CSSBI guidelines.
- .4 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.
- .5 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.
- .6 Only materials to be installed on same day to be removed from protected location to work site.
- .7 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.
- .8 All materials elevated off ground, and on a pallet or skid to protect bottom surface from foreign debris and moisture. Roll materials to be stored standing vertically.
- .9 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.
- .10 Handle and store products in a manner to prevent damage and deterioration.
- .11 Remove and replace damaged products at own expense and to satisfaction of Consultant.

1.9 ENVIRONMENTAL REQUIREMENTS

- .1 Comply with CSSBI's installation instructions and recommendations.
- .2 Do not apply roofing materials to damp, wet, or frozen deck or substrates.
- .3 Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed during same day.
- .4 Only install as much new roofing as can be made weather-tight each day, including all flashing and detail work.
- .5 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.
- .6 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.
- .7 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.
- .8 Follow all safety regulations as required by OHS (Occupational Health and Safety) and any other applicable authority having jurisdiction.
- .9 All roofing, flashings and metal work removed during construction to be immediately taken off site to a legal dumping area authorized to receive such materials. Hazardous materials, such as materials containing asbestos, are to be removed and disposed of in strict accordance with applicable Local, Provincial, and National requirements.

- .10 All new roofing waste material to be immediately removed from site by Contractor and properly transported to a legal dumping area authorized to receive such material.
- .11 Take precautions that storage and/or application of materials and/or equipment does not overload roof deck or building structure.
- .12 Flammable adhesives and deck primers to not be stored and not be used in vicinity of open flames, sparks and excessive heat.
- .13 All rooftop contamination that is anticipated or that is occurring to be reported to manufacturer to determine corrective steps to be taken.
- .14 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.
- .15 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.
- .16 Site cleanup, including both interior and exterior building areas that have been affected by construction, to be completed to satisfaction of Consultant.
- .17 All landscaped areas damaged by construction activities to be repaired at no cost to Owner.
- .18 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.
- .19 Protective wear to be worn when using solvents or adhesives or as required by job conditions.
- .20 Metal panels are slippery when wet or covered with snow, frost, or ice. Working on surfaces under these conditions is hazardous. Appropriate safety measures must be implemented prior to working on such surfaces. Always follow OHS and other relevant fall protection standards when working on roofs.

1.10 PREPARATORY WORK

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

1.11 SAFETY AND PROTECTION

- .1 Latest edition of all listed references to apply:
 - .1 CAN/CSA S269.2M: Access Scaffolding for Construction Purposes.
 - .2 Fire Commissioner of Canada: FC 301 - Standard for Construction Operations.
- .2 Solvents and Adhesives:
 - .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 Refer to Manufacturer's literature for guidelines.
 - .3 Protect walls where hoisting is required.
 - .4 Protect roofs from damage due to traffic and materials handling until completion.
 - .5 Keep a fire extinguisher at access to building interior wherever solvent based products are stored

or used.

.3 Fire Safety:

- .1 Contractor must keep charged and ready fire extinguishers on site at all times, including on roof and at access points to building interior.

.4 Health and Safety:

- .1 Contractor to comply with all safety requirements as per current printed edition of Provincial Occupational Health and Safety Act and with Roofing Contractors Association of BC (RCABC) standards if applicable.

1.12 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. Cost of Contractor's Workmanship Warranty to be included in the contract price.

.2 Manufacturer's Material Warranty:

- .1 Provide a written Forty (40) Year Silicone Modified Polyester (SMP) Limited Conditional Warranty from the date of Approved Final Inspection. Cost of Manufacturer's Warranty to be included in the contract price.

.3 Cost of all Field Reviews to be paid by Owner.

.4 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.

2. PART 2 - PRODUCTS

2.1 DESIGN REQUIREMENTS

.1 Design system to accommodate and withstand the following without permanent deformation or damage to, or failure of, roofing system or building structure:

- .1 Roofing system dead loads, snow loads, ice loads, and wind loads, and combinations thereof, in accordance with the building code.

1. Design wind loads shall be as indicated in building code and greater values as required, and to maximum allowable deflection without permanent deformation.

- .2 Prevent infiltration of water and snow into roof system. Provide adequate drainage of water from rain screen cavity.

.2 Design system in accordance with CSA-S136 for the design of cold formed steel structural members.

.3 Structural loads: Resist all expected live and dead loads including positive and negative wind pressures expected in this geographical area with a maximum allowable deflection of 1/240 of the span.

- .1 Deflection of roof system due to uniformly distributed specified loads shall not exceed L/180 of the span for roofs.

- .2 Components shall not vibrate or rattle when subjected to the effects of wind.

.4 Wind uplift: Roofing system shall meet roofing system manufacturer's 177 kph (110 mph) wind speed warranty requirements or equivalent CSA 123.21 Windstorm Classification minimum

.5 Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, overstressing of components, failure of connections, and other detrimental effects.

Base calculations on surface temperatures of materials due to both solar heat gain and nighttime sky heat loss.

- .1 Temperature Change (Range): 20 deg C, ambient; 40 deg C, material surfaces

2.2 GENERAL

- .1 Prevent water from entering building and roofing assembly through roofing system.
- .2 Wind uplift: Roofing system shall meet roofing system manufacturer's 177 kph (110 mph) wind speed warranty requirements or equivalent CSA 123.21 Windstorm Classification minimum.
- .3 All materials are to be supplied by the contractor, meeting manufacturer's respective material compatibility requirements to achieve required System Warranty.
- .4 Components to be used that are other than those supplied or manufactured by metal roof manufacturer may be submitted for review and acceptance by metal roof manufacturer.
- .5 Roofing Manufacturer's acceptance of any other product is only for a determination of compatibility with products and not for inclusion in manufacturer's warranty.
- .6 Specifications, installation instructions, limitations, and/or restrictions of respective manufacturers must be reviewed by Consultant for acceptability for intended use with metal roof manufacturer's products.

2.3 MEMBRANE PRIMER

- .1 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:
 - .2 Elastocol Stick by Soprema Inc.

2.4 UNDERLAYMENT MEMBRANE

- .1 Roof underlayment membrane: For use at all locations beneath insulation. Acceptable Products with related primer:
 - .1 Lastobond Shield HT as manufactured by Soprema or approved equal. Select Winter Grade or Summer Grade depending on application temperatures.

2.5 PREFINISHED METAL ROOFING PANELS

- .1 Prefinished sheet steel panels: Cold roll-formed metal cladding panels made from Zinc coated sheet steel to ASTM A653/A653M and with coating designation Z275 (G90) to ASTM A924/A924M. Metal profiles to match the existing gymnasium roof.
 - .1 Preformed metal thickness: Not less than 0.61mm (24 gauge) nominal steel thickness.
 - .2 Panel be to 457mm (16") wide with three intermediate ribs.
 - .3 Standing seam area to be minimum 44.4mm tall (1.75").
 - .1 Standing Seam Metal Roof System - Snap Lok II 675 panel.
 - .2 Or Owner approved equivalent, approval to be in writing prior to award.
 - .4 Finish: Silicone Modified Polyester (SMP).
 - .5 Colour: Colour to be Charcoal.
 - .6 Drag screw requirements to be determined by the manufacturer. Submit shop drawings to Consultant for review.

2.6 SHEET MATERIALS

- .1 Conform to the appropriate CSA, CGSB, ULC and ASTM Standards used in the roofing system specified.
- .2 Sheet steel roofing and flashing shall be formed of steel conforming to the following material specification:
 - .1 24 gauge galvanized sheet steel, conforming to ASTM A653/A653M-06 SS Grade 33, Z275 (G90) coating. Thickness tolerance as per ASTM A924/A924M-06 + / - 0.003" for sheet widths not exceeding 60".
- .3 Prefinished sheet steel, in addition to meeting the requirements as applicable, shall be coated by one of the following factory applied, heat cured paint systems.
 - .1 Silicone Modified Polyester (SMP) 2-coat system. Standard ordering practice is a 5 micron (0.2 mil) primer plus a 20 micron (0.8 mil) top coat. Top side dry film thickness to be a minimum 20 microns (0.8 mil).
 - .2 70% Polyvinylidene Fluoride resin (PVDF) 2-coat system. Standard ordering practice is a 5 micron (0.2 mil) primer plus a 20 micron (0.8 mil) top coat. Top side dry film thickness to be a minimum 20 microns (0.8 mil).
 - .3 Plastisol 2-coat system. Coating thickness is typically between 75 to 200 microns (3-8 mil).
- .4 Colour: Red. To be selected from manufacturer's standard range and to match existing building. Submit samples to the Owner.
- .5 Fastener Clips and Screws:
 - .1 Proprietary metal panel clips must be listed as acceptable by the metal panel machine manufacturer for use with the metal roofing systems, one piece assembly, No. 22 MSG min thick, 87.5 mm (3-1/2") wide, 47.6 mm (1-7/8") high.
 - .1 Clips to be minimum UL Classified 1-15/16" SnapLock clip in 18ga galvanized steel as supplied by AMSI Supply.
 - .2 Proprietary fasteners: Fasteners used to attach panel clips to steel to be No. 10-16 by 25 mm (1") long cadmium plated pancake head No. 2 Phillips drive, No. 3 self-drilling point steel screws. Two screws per clip inserted through 6.25 mm (1/4") diameter guide holes.
- .6 Bearing Plates:

- .1 Proprietary bearing plates must be listed as acceptable by the metal panel machine manufacturer for use with the metal roofing systems SnapLock Clip.
- .2 Clips to be minimum UL Classified 1-15/16" SnapLock clip in 18ga galvanized steel as supplied by AMSI Supply.
- .7 Closures: Weatherproof, laminated, semi-rigid, cross-linked polyethylene foam, tightly fit to panel profile.
- .8 Sealant Options:
 - .1 Caulking being gunnable grade, single component urethane caulk.
 - .2 Sealant: Butyl tape sealant.

2.7 OTHER FASTENERS

- .1 All fasteners and plates to meet requirements of Factory Mutual Global 4470 Standard for wind uplift and corrosion resistance in roofing.
- .2 Exposed Fasteners: Minimum 3/16" UDrill Self-Drilling Screws with hex washer head and bonded EPDM fastener as manufactured by UCAN Fastening Products or approved equal, of sufficient length to penetrate into substrate a minimum 6mm (.25"). Install according to manufacturer's instructions.
 - .1 Colour to match prefinished metal panels.
- .3 Hidden fasteners: Self-tapping metal screws as specified by panel manufacturer, to resist wind uplift to CSA 123.21 standards and sliding snow forces.
 - .1 Phillips Modified Truss Head fastener as manufactured by UCAN Fastening Products or approved equal, of sufficient length to penetrate into substrate a minimum 6mm (.25"), zinc plated. Install according to manufacturer's instructions.
- .4 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.

2.8 ACCESSORIES

- .1 Accessories and hardware: Zinc coated steel to meet specified requirements of CAN/CSA-G164, hot dip galvanized after fabrication.
- .2 Adjustable rubber boot: Master Flash EPDM by Leland Industries Inc.
- .3 Closures: Foam and metal closures to suit profiles selected, to manufacturer's recommendations and to match colour of prefinished metal roof.
- .4 Sealant: non-skinning butyl, to manufacturer's standard.

- .5 Clip and sub-girts: Thermally responsive flush mount clip system, fabricated from 1.22 mm (18 gauge) minimum base steel, with minimum Z275 galvanized coating.
 - .1 Z-girts when necessary shall be pre-painted black for added corrosion resistance.
- .6 Rafter Baffles: Extruded polystyrene baffles to provide a depth of 50mm (2") x 560mm (23") x 1,216mm (48") opening.
 - .1 Raft-r-mate by Owens Corning is preapproved.
- .7 Rivets: Stainless steel with pan heads painted after installation.
- .8 Isolation Coating: alkali resistant bituminous paint meeting CGSB1-108C-Type 2.
- .9 Exposed sealants: in accordance with Section 07 92 00.

2.9 FABRICATION

- .1 Allow for structural movements within the systems, and to accommodate thermal expansion and contraction between panels and structural members.
- .2 Ensure that metal panels are free of steel contamination from rollers.
- .3 Fabricate siding panel systems to prevent entry of water into building and from collection within system assembly.
- .4 Join intersecting parts together to provide tight, accurately fitted joints with adjoining surfaces in true planes.
- .5 Cooperate with applicable sections to ensure coordination required for proper installation of work of this section in conjunction with and incorporated with other work.
- .6 Prefinished metal panel terminations shall not have a raw metal edge or exposed fasteners. Panel ends for non-corrugated panels shall be folded.
- .7 Use competent mechanics and work accurately to details indicated and as specified herein.
- .8 Verify all dimensions on site prior to fabrication.
- .9 Fabricate sheet metal flashings to the size and shape indicated for drip flashings; termination flashings, starter strips and all other flashings, closures and trim as required according to site measurements.
- .10 Fabricate drip and sill flashings to provide a minimum 2% slope outward. End joints of adjacent lengths of metal flashing shall be made using an "S-lock" joint.
- .11 All edges to be hemmed a minimum 12.7mm (0.5") for appearance and stiffness.
- .12 Incorporate for concealed anchorage of flashing and means for adjustment of level during installation.
- .13 End joints where adjacent lengths of metal flashing meet shall be made in accordance with jointing method specified hereinafter.
- .14 Damaged or bent sheets shall be rejected.

2.10 METAL FLASHINGS

- .1 Prefinished Sheet Metal Gutters, Flashings, Step Flashings, Diverters & Trim: At Eaves, Fascia, Rakes, Valleys and Dormers:
 - .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). Colour selected by Owner from Manufacturer's standard colour range.
 - .3 Cascadia Metals Inc. and Makin Metals are pre-approved manufacturers. Alternate manufacturers require Approval by Consultant.
- .2 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).

3. 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 Roofing Contractors Association of BC (RCABC),
 - .2 Canadian Roofing Contractors Association (CRCA),
 - .3 Manufacturer's preprinted and published technical specifications,
 - .4 CAN/ULC Design No. S-107 criteria,
 - .5 Factory Mutual Global design criteria FM 1-28 and 1.49,
 - .6 Compliance with local fire insurance requirements,
 - .7 Compliance with local building codes.
- .2 Procedures for application of materials should be in accordance with Manufacturer's printed instructions and recommendations.
 - .1 Advise Consultant of adjustments to specified roofing procedures recommended by Manufacturer or due to site conditions.
 - .2 Written approval by Consultant is required to make any adjustments to specified procedures.
- .3 All work to be carried out in accordance with drawings, and specifications provided.
 - .1 All supplied drawings and details constitute acceptable installations. Any deviance from these details must first 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 Apply each part of roofing system when surfaces are free of moisture for successful application.

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 Verify that backup construction is aligned for proper installation of prefinished metal roofing system before commencing erection.
- .3 Defective work resulting from application to unsatisfactory conditions will be considered responsibility of those performing work of this section.

3.3 PROTECTION

- .1 Adjacent Buildings and Tenants:
 - .1 Take care to not damage any adjacent or closely located buildings and all related grounds in vicinity of Work during roofing operations.
 - .2 Protect against infiltration of dust, debris, and other such contaminants and occurrences.
 - .3 Locate garbage chutes to minimize exposure to adjacent building, its grounds, and its occupants.
 - .4 Protect walls by means of tarpaulins where garbage chutes and hoisting equipment are located and operated.
 - .5 Cover dumpsters and bins to prevent debris from blowing away.
 - .6 Do not use spray installation methods on days with significant wind.
 - .7 Damage to adjacent buildings, grounds, and vehicles to be rectified by Contractor at no additional cost.
- .2 Adjacent Roof Areas and Completed Work:
 - .1 Take care not to damage any previously performed work or existing roofs.
 - .2 If work area is accessed across existing roof areas, provide protection to existing roof system. Use continuous Protection Walkways consisting of 19mm (0.75") plywood sheathing over 38mm (1.5") extruded polystyrene insulation.
 - .3 Protect newly installed roof work from traffic and damage using Protection Walkways where warranted by traffic requirements.
 - .4 Comply with any precautions deemed necessary by Consultant.
- .3 Material Storage:
 - .1 Deliver all materials to site in undamaged condition with original manufacturer's label intact and clearly visible for easy verification of specified materials.
 - .2 Provide security fencing at all times for equipment and materials stored at ground level.
 - .3 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 adhesives, and sealants when temperature falls below 5 °C (40 °F).
 - .4 Protect all vents, stacks, drains and related deck openings from inclement weather and contamination from debris.
- .6 Roof Safety, Access, and Egress:
 - .1 Use warning signs and barriers. Maintain in good order until completion of work.
 - .2 Access to roof to remain unobstructed.
 - .3 Keep doorways and fire routes clean and clear of any obstacles.
 - .4 Protect and safeguard all man-size or larger openings in roof deck with warning flags and suitable temporary barriers or railings.
- .7 Damage and Defective Work:
 - .1 Avoid use on roof of any petroleum based and other chemical products that are corrosive and/or damaging to roofing system. 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 The Roofing Contractor is responsible to conduct a pre-construction survey, including photo documentation, of existing interior ceiling and attic spaces to identify existing damage, nail pops in gypsum, organic growth, inadequate ventilation (blocked soffits), etc. prior to the start of work.
- .2 No work is to begin until metal roof colour has been approved by Owner.
- .3 All building walls, windows, doors etc. to be protected with wood sheathing in vicinity of work area.

- .4 Prior to installation of underlayment, roof deck and structural members on all designated areas to be visually reviewed for any deterioration or defect that may impact soundness and structural integrity of new roof sheathing and roof system. Any deficiencies found in decking members are to be reported to Consultant and Owner immediately.
 - .1 Notify Consultant of review at least forty-eight (48) hours prior to site review.
- .5 Any wood found to be deteriorated or otherwise not suitable for to its intended function will be replaced with new material to match existing in all aspects of configuration as per Section 06 10 00 Rough Carpentry.
- .6 Damaged or otherwise deficient structural members must be replaced or repaired before any further work can take place on that particular roof section. Contractor to supply and install new structural members to match existing on a time and material basis.
- .7 Re-secure loose existing wood deck components with specified fasteners.
- .8 Remove all nails and other fasteners used to secure existing roofing assembly and flashings. Do not set broken nails and other fasteners. Ensure deck is free of all dirt and loose materials.
- .9 Ensure substrate is smooth. Remove sharp edges or protrusions that could impair performance of new underlayment.
- .10 In area of eave protection clean surface of deleterious material to ensure proper adhesion as required by product manufacturer.
- .11 Examine work of other trades for defects and discrepancies and report them to Owner/Consultant in writing. Do not proceed with work until surfaces are satisfactory.
- .12 Any rooftop equipment requiring disconnection to be responsibility of Contractor in consultation with Owner unless otherwise specified in this document.
- .13 All details supplied with this scope of work package are acceptable installations. Any deviance from these details must first approved by Consultant prior to installation.
- .14 Disconnect and reconnect Electrical and Mechanical Services as / if required to facilitate the Work. All costs associated with this are to be borne by the Roofing Contractor.
- .15 Miscellaneous Supports: Install sub-framing, furring, and other miscellaneous panel support members and anchorages according to ASTM C 754 and metal panel manufacturer's written recommendations.
- .16 Existing Roof Removal:
 - .1 Remove existing metal roof system components, including panels, flashings and underlayment, following Health and Safety Plan and directions of Environmental Consultant for handling of metals treated with lead based paints. Dispose of all debris to an appropriate site and as directed by Environmental Consultant.
 - .2 At areas designated for roof removal and replacement, remove existing projection and perimeter metal flashings, and old appurtenances. Dispose removed items to an appropriate site for building material waste.
 - .3 Repair existing roof strapping as required to close off any deck openings prior before proceeding with new roof system installation.

3.5 ROOF UNDERLAYMENT

- .1 Install 12.7mm (1/2)" plywood deck overlay as per Section 06 10 00.

- .2 Install one (1) ply self-adhesive modified bitumen roof underlayment as per Manufacturer's written guidelines. Installation to be free of blisters, wrinkles and fish-mouths.
 - .1 Roof underlayment must be installed on same day as primer application.
 - .2 Do not install when it is raining or snowing, on wet/humid surfaces, or when inclement weather is expected shortly.
 - .3 Substrate must be clean, dry, and free of dirt, dust, grease, or other contaminants.
- .3 Primer Installation:
 - .1 Prime substrates and install membrane in accordance with membrane manufacturer's written installation instructions.
 - .2 Prime exposed surfaces to receive membrane. Apply primer to clean and dry surfaces with a paint brush, roller or sprayer at temperatures 0°C (31°F) and above.
 - .3 Apply primer at a coverage rate between of 0.1 to 0.5 L/m² (0.25 to 1.22 gallon/100 ft²) as recommended by membrane manufacturer for surface type.
 - .4 Provide minimum of 50 mm (2") side laps and 75 mm (3") end laps.
 - .5 Cut to manageable lengths, position membrane for alignment, remove protective poly-film and firmly apply pressure to assure adhesion.
 - .6 Eliminate wrinkles or gaps, roll entire membrane surface (including seams) with a counter top or "J-roller" to ensure full contact and adhesion.
 - .7 Ensure all substrates are fully covered with primer leaving no areas bare and avoid pooling.
 - .8 Allow primer to dry completely prior to installation of roof underlayment membrane.
- .4 Membrane Installation:
 - .1 Begin application at bottom of roof slope. Position membrane rolls for alignment and unroll to apply membrane perpendicular to deck slope. Do not immediately remove release sheet on self-adhering membranes until satisfied with alignment.
 - .2 Overlap each preceding row of membrane sheet by min. 76mm (3") on side laps and by a min. 152mm (6") at end laps. Stagger end laps of adjacent rows by at least 305mm (12").
 - .3 Use a 34kg (75lbs) 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.
 - .4 Carry roof underlayment up all vertical surfaces at parapets and projections a minimum of 152mm (6") to allow for encapsulating of new insulation with roof membrane as indicated on detail drawings.
 - .5 Apply mastic to joints that may be subject to water intrusion.
 - .6 Carefully review membrane surface daily for damage / holes caused by construction traffic. Patch with new membrane only, patch to provide 2" x 2" coverage past edges of hole.

3.6 EXAMINATION

- .1 Certified installer shall examine substrates, areas, and conditions, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of the Work.
 - .1 Examine primary and secondary roof framing to verify that rafters, purlins, angles, channels, and other structural panel support members and anchorages have been installed within alignment tolerances required by metal roof panel manufacturer.
 - .2 Examine solid roof sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal roof panel manufacturer.
 - .3 Verify that air- or water-resistive barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.
- .2 Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before installation.
 - .1 Proceed with installation only after unsatisfactory conditions have been corrected.

3.7 PREPARATION

- .1 Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C 754 and metal panel manufacturer's written recommendations.

3.8 UNDERLAYMENT INSTALLATION

- .1 Synthetic Underlayment: Apply at locations indicated on Drawings, in shingle fashion to shed water, and with lapped joints of not less than 50mm (2").
 - .1 Apply over the entire roof surface.
 - .2 Flashings: Install flashings to cover underlayment to comply with requirements specified in Section 076200 "Sheet Metal Flashing and Trim."

3.9 METAL PANEL INSTALLATION

- .1 General: Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated. Install panels perpendicular to supports unless otherwise indicated. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.
- .2 Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
 - .1 Locate and space fastenings in uniform vertical and horizontal alignment.
 - .2 Two panel weather stops must be installed at up-slope terminations. Weather stops may be any combination of foam closures, metal Z-closures, metal flashing turned down between panel ribs to close off openings and / or turned up (bread panned) panel ends.
 - .3 Metal panel ends turned up (bread panned) must be turned up to a height equal to the panel ribs or standing seams. Turned up corners (dog ears) are not to be cut.
- .3 Metal Z-closures must be sealed weather tight with caulking and / or sealant tape.

- .4 Install flashing and trim as metal panel work proceeds.
- .5 Align bottoms of metal panels and fasten with self-tapping screws. Fasten flashings and trim around openings and similar elements with rivets and self-tapping screws.
- .6 Fasteners:
 - .1 Steel Panels: Use painted galvanized-steel fasteners for surfaces exposed to the exterior; use galvanized-steel fasteners for surfaces exposed to the interior.
 - .2 Aluminum Panels: Use aluminum or stainless-steel fasteners for surfaces exposed to the exterior environment.
- .7 Anchor Clips: Anchor metal roof panels and other components of the Work securely in place, using manufacturer's approved fasteners according to manufacturers' written instructions.
- .8 Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.
- .9 Standing-Seam Metal Roof Panel Installation: Fasten metal roof panels to supports with concealed clips at each standing-seam joint at location, spacing, and with fasteners recommended in writing by manufacturer.
 - .1 Install clips to supports with recommended fasteners.
 - .2 Install bearing plates at locations indicated in manufacturer's written installation instructions.
 - .3 Snap Joint: Nest standing seams and fasten together by interlocking and completely engaging.
 - .4 Seamed Joint: Crimp standing seams with manufacturer-approved, motorized seamer tool so clip, and metal roof panel are completely engaged.
- .10 Perimeter Edge Securement
 - .1 Metal panels with low intermediate stiffening ribs must be installed using a perimeter hook strip.
 - .2 Trapezoidal and intermediate rib standing seam metal roof panel perimeter eave securement must be installed according to the manufacturer's printed instructions and RoofStar Guarantee Standards. Exposed fasteners are not to be used.
- .11 Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.
 - .1 Install components required for a complete metal panel system including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by metal roof panel manufacturers; or, if not indicated, types recommended by metal roof panel manufacturer.
 - .2 Metal roof panel penetrations, e.g. plumbing, venting, flashings, etc., must have a minimum 300 mm (12") clearance from all other roof projections to permit proper flashing.
 - .3 Metal roof flexible pipe penetration flashings must be located so as not to interfere with standing seams or panel ribs. If interference is unavoidable, roof curbs or a split sheet detail must be used.

- .12 Metal Valleys
 - .1 Metal valley overlaps must be a minimum of 200 mm (8") with two rows of approved caulking or sealant tape.
 - .2 Metal valley drag load fastening (top edge of valley sections) shall be 75 mm (3") o/c. Drag load fastening is mandatory on unhooked valleys but may not be required on hooked valleys.
 - .3 Valley dividers are required and must be a minimum of 25 mm (1") high.
 - .4 Exposed valley widths must be a minimum 125 mm (5") from divider to metal roof panel on each side of the divider. Increased width is recommended in heavy snow load areas.
 - .5 Unhooked metal valley sections must be returned 25 mm (1") and secured with minimum 50 mm (2") wide metal clips, fastened with two fasteners each. Bend metal clips back over fasteners to protect the metal panels. Metal roof panels must overlap unhooked metal valleys a minimum of 275 mm (11") and be sealed with two rows of preformed foam closures adhered with approved sealant tape.
 - .6 Hooked metal valley, metal roof panel overlaps must be a minimum of 125 mm (5") wide with a one-piece built-in hook strip. Fasteners must be 200 mm (8") o/c and covered with approved self-adhered modified bituminous membrane sealed to the valley protection membrane.
- .13 Metal Cap / Hip Flashing
 - .1 Metal cap / hip flashing must extend a minimum of 150 mm (8") over metal roof panels on each side of the ridge / hip.
 - .2 Standard cap / hip flashing must be hooked to metal Z closures which are set in sealant tape and fastened through the metal roof panel into the deck or fastened to each standing rib with manufacturer-approved, colour matched, high domed gasketed fasteners and preformed foam closures installed as a weather seal.
 - .3 Notched cap / hip flashing must be fastened on each panel rib and preformed foam closures installed as a weather seal. Only manufacturer-approved, colour matched, high domed gasketed fasteners may be used
- .14 Downspouts: Join sections with telescoping joints. Provide fasteners designed to hold downspouts securely 25mm (1") away from walls; locate fasteners at top and bottom and at approximately 1524mm (60") o/c in between.
 - .1 Connect downspouts to underground drainage system if present.
- .15 Roof Curbs: Install flashing around bases where they meet metal roof panels.
- .16 Pipe Flashing: Form flashing around pipe penetration and metal roof panels. Fasten and seal to metal roof panels as recommended by manufacturer.
- .17 Remove and replace applications of metal roof panels where inspections indicate that they do not comply with specified requirements.
- .18 Additional inspections, at Contractor's expense and when discussed, may be performed to determine compliance of replaced or additional work with specified requirements.

3.10 CLEANING AND PROTECTION

- .1 Remove temporary protective coverings and strippable films, if any, as metal panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.
- .2 Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

3.11 MISCELLANEOUS MECHANICAL & ELECTRICAL

- .1 Co-ordinate roofing work with General, if applicable and other Sub-Contractor trades that may be present on roof.
- .2 Unless stated in writing elsewhere, Contractor responsible to:
 - .1 Coordinate any planned disruptions in advance with Owner to minimize inconvenience.
 - .2 Modify existing sleepers, curbs, and supports as required to suit new roof system installation and configuration as detailed. Ensure modified sleepers, curbs, and supports are made watertight with new roof system and flashings as required.
 - .3 Provide overnight security, at no additional cost to Owner, where removal of any material 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.
- .3 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.

3.12 METAL FLASHINGS

- .1 After installation of metal roof, new perimeter metal and metal flashings are to be installed as detailed in Section 07 62 00 and as indicated on detail drawings.
- .2 Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.
 - .1 Install exposed flashing and trim that is without buckling and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and achieve waterproof and weather-resistant performance.
 - .2 Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 3m (10') with no joints allowed within 610mm (24") of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 25mm (1") deep, filled with mastic sealant (concealed within joints).

3.13 SEALANTS

- .1 After installation of metal roof, install sealants as per Section 07 92 00 – Sealants and as recommended by metal roof manufacturer.

3.14 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.

END OF SECTION - 07 61 13

1. 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 01 56 00 – Temporary Barriers and Enclosures
- .3 Section 02 41 19 – Selective Demolition & Removal
- .4 Section 07 61 13 – Prefinished Metal Roofing
- .5 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 tender.

.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.

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.

1.9 QUALITY ASSURANCE OBSERVATION

- .1 IRC Building Sciences Group, 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.

2. 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 Consultant.
- .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 Consultant 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 Consultant 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 Consultant 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 Consultant Approved Equal, to penetrate substrate by 32mm (1.25"), minimum unless otherwise shown. Install according to manufacturer's instructions.
 - .1 Drill hole 6mm (.25") 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 Master Gripper Self-Drilling Screws with hex washer head and Master Seal Washer as manufactured by Leland Industries, or Consultant Approved Equal, of sufficient length to penetrate into substrate a minimum 6mm (.25"). 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.
- .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 Design Authority 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.

3. 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. Nails are not acceptable into any substrate.
- .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 poprivets.
 - .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, this 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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1. PART 1 – GENERAL

1.1 SECTION INCLUDES

.1 Gutters and downspouts.

.2 Accessories.

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 61 13 – Prefinished Metal Roofing

.7 Section 07 62 00 – Sheet Metal Flashing & Trim

.8 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 tender.

.7 Canadian Roofing Contractors Association (CRCA): Roofing and Waterproofing Manual

1.4 SUBMITTALS

- .1 Shop Drawings: Submit shop drawings with profile(s) for review by consultant prior to fabrication.
- .2 Samples: Provide nominal 305mm (12") sample of gutter profile and 305mm (12") length of rainwater leader for review by Owner and Consultant.

1.5 QUALITY ASSURANCE

- .1 Manufacturer Qualifications: Manufacturer shall have a minimum of five (5) years' experience in the production of sheet metal gutters and downspouts.
- .2 Fabricator Qualifications: Shall be approved by manufacturer for fabrication of gutters and downspouts.

1.6 STORAGE AND HANDLING

- .1 Do not store metals in direct contact with the earth, road surface, or roof deck. Place suitable supports under the metal upon delivery to protect it from scratching or puncturing membrane, membrane flashing or absorbing moisture from the surrounding terrain or deck.
- .2 Store all materials in waterproof covered trailers.
- .3 Store caulking at +5°C minimum.
- .4 Handle and store products in a manner to prevent damage and deterioration.
- .5 Remove and replace damaged products at own expense and to the satisfaction of the Quality Observer and Consultant.
- .6 Maintain fire watch for two hours after each day where soldering operations were in use and examine all flashings with an infrared thermal fire scanner as manufactured by Rayteck and supplied by Lexcor or an approved equal prior to departing from the site.
- .7 Apply materials in accordance with the manufacturer's recommendations.
- .8 Prepare and submit for approval shop drawings showing layout of new gutters, including but not limited to:
 - .1 Material thicknesses,
 - .2 Forming,
 - .3 Slopes,
 - .4 Seam, joint and connection layout,
 - .5 Securement details.

1.7 WARRANTY

- .1 The Contractor shall supply the Owner with a 2 year material and workmanship warranty on Contractor letterhead.

1.8 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 Upon completion of new installation, provide certification that all work has been done in strict accordance with Contract Documents and if applicable, to Manufacturer's requirements.

1.9 QUALITY ASSURANCE OBSERVATION

- .1 IRC Building Sciences Group, 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 gutters and downspouts with both Observer and Owner's Representative.
 - .4 Review Section 01 00 00 Item 1.21 Quality Control.
- .2 When required, provide roof sampling where directed by Observer and make good without additional cost to Owner.
- .3 Copies of Q.A. Observation Reports to be issued by Observer to Owner and Prime Contractor.

2. PART 2 - PRODUCTS

2.1 MANUFACTURER

- .1 Contractor supplied roll forming machine, as pre-approved at the point of Tender with Consultant.

2.2 GUTTERS

- .1 Materials:
 - .1 Aluminum Coil Stock: Formed and coated aluminum coil stock; 3105 H24 aluminum.
- .2 Box Gutter Fabrication:
 - .1 Size: 127mm (5"), minimum 82.6mm (3.25") at base.
 - .2 Length: Continuous.
 - .3 Profile: K style (Ogee)
 - .4 Material Thickness: .813mm (0.032").
- .3 Colour:
 - .1 Match existing or as selected by Owner.
- .4 Gutter Corner Fabrication:

- .1 Provide mitered corners, lapped, sealed and riveted. Corners shall extend a minimum of 19mm ($\frac{3}{4}$ ") from the corner in each direction. Lap joint and sealant where connecting to continuous gutter.
- .2 Match material, shape and finish of gutter.

2.3 DOWNSPOUTS

- .1 Round downspout fabrication:
 - .1 Size: 76mm (3").
 - .2 Length: 3,048mm (Standard 10').
 - .3 Profile: Plain Round.
 - .4 Material Thickness: Schedule 40 - 3.3mm (0.133").
 - .5 Colour:
 - .1 White, or as selected by Owner.

2.4 ACCESSORIES

- .1 Gutters:
 - .1 End Caps: Match material, shape and finish of gutter.
 - .2 Drop Outlet Tubes: Match material and shape of downspout.
- .2 Gutter Support:
 - .1 Hidden Gutter Hanger:
 - .1 Aluminum 5" Hangfast with clip and 3.5" screw as manufactured by Raytec LLC,
 - .2 Or Consultant approved equivalent.
- .3 Downspouts:
 - .1 Downspout Support:
 - .1 Exposed strap.
 - .2 Colour: Match Downspout.
- .4 Miscellaneous downspout components: Provide all necessary PVC elbows, downspout offset sections, and pop rivets as required for a complete installation. All miscellaneous components shall match existing downspouts.
- .5 Fasteners:
 - .1 Stainless steel fasteners of sufficient length to penetrate minimum 1 inch into substrate.
- .6 Gutter Splash Guards:
 - .1 Match material and finish of gutter.

- .7 Mechanical Seals: Flexible PVC coupler with metal hose clamps, 1056 series as manufactured by Fernco Connectors Ltd. of appropriate sizes for the work.
- .8 Flashing: As per Section 07 62 00 Prefinished Sheet Metal Flashing and Trim.
- .9 Sealants: As per Section 07 92 00 Joint Sealants.
- .10 Downspout Strainer: Steel wire-ball downspout strainer.
- .11 Precast Concrete 11" x 24" Splash Blocks.

2.5 FINISH

- .1 Exterior Coating:
 - .1 As per Section 07 62 00 Flashing and Trim.
 - .2 Colour: As selected from manufacturer's standard color line.
 - .1 Owner to approve colour.

3. PART 3 - EXECUTION

3.1 PREPARATION

- .1 Verify that substrates are in place and ready for installation of gutters and downspouts.

3.2 INSTALLATION

- .1 General: Install the Work securely in place and provide for expansion and contraction of components using lapped and sealed joints
 - .1 Do not install damaged components.
 - .2 Separate dissimilar metals to prevent galvanic action through the use of bituminous coating or other permanent separation recommended by SMACNA.
 - .3 Space expansion joints in gutters at a maximum of 15.24M (50') centers.
 - .4 Rivet joints where required for strength, exposed rivet shall be stainless steel and match gutter or downspout color.
 - .5 Torch cutting of components is not allowed.

3.3 GUTTERS:

- .1 Install gutter supports at no less than 406mm (16") on center.
- .2 Slope gutters evenly to downspouts; provide end caps at gutter ends and seal watertight per manufacturer's instructions.
- .3 Install aluminum outlet tubes at all downspout locations, seal watertight.
- .4 Apply joint sealants at gutter joints per manufacturer's installation instructions and to meet the requirements of Section 07 92 00 – Joint Sealants.
- .5 Gutters shall have a net positive slope of 1/8" per foot between high point and downspouts.
- .6 Install gutter splashguards at all inside corners.

3.4 DOWNSPOUTS:

- .1 Install downspouts, provide elbows and offsets, and secure downspouts to wall construction using downspout supports spaced no more than 3,048mm (10') on center. Maximum distance of downspout support from top or bottom of downspout shall be 610mm (2'). Tie into existing building perimeter drainage system (BPDS). If no BPDS is in place, notify the Consultant.
 - .1 Where downspout connects to building perimeter drainage system, lap downspout and perimeter drainage pipe a minimum of 76mm (3").
 - .2 Install mechanical seals (Fernco's) from gutter drop outlet to downspouts.
- .2 Gutter clean-out shall be installed 24" from entrance to BPDS.
- .3 Fabricate and install a new, fully soldered square to round transition to attach new downpipe to existing sub surface drain as required.
- .4 Install downspouts from upper roofs across lower roofs, and exhaust into lower roof gutters if necessary.
 - .1 Install 90° elbow to direct water into lower roof gutter.
 - .2 Colour to closely match roof colour. Review on site with Consultant.

3.5 CLEANING AND PROTECTION

- .1 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.
- .3 Final cleaning:
 - .1 Remove temporary protection.
 - .2 Remove dust, dirt and foreign matter from surfaces.
 - .3 Broom clean paved exterior surfaces, rake clean other exterior surfaces.
 - .4 Ensure that all fasteners have been removed from roof and surrounding site. Clean all gutters and downspouts of debris generated as a result of this work.
 - .5 Remove full garbage bins immediately. Do not pile debris or garbage on project site.
 - .6 At end of project, landscaping to be repaired to match original conditions.

END OF SECTION - 07 62 13

1. 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 61 13 – Finished Metal Roofing
- .4 Section 07 62 00 – Prefinished Sheet Metal Flashing & Trim

1.2 REFERENCES

Latest edition of all listed references to apply:

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

1.3 QUALITY ASSURANCE OBSERVATION

- .1 Observation of work will be carried out by designated QA Observer.
- .2 Prior to mobilizing on site, prepare and install sealant samples for adhesion testing, a minimum of two (2) samples for each substrate combination, according to 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.

1.4 DELIVERY, STORAGE, AND HANDLING

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

1.5 ENVIRONMENTAL AND SAFETY REQUIREMENTS

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

1.6 WASTE MANAGEMENT AND DISPOSAL

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

2. 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 governmental and industrial safety and performance standards.
 - .2 Be manufactured and transported in such a manner that all steps of process, including disposal of waste products arising therefrom, will meet requirements of all applicable governmental acts, by laws and regulations.
 - .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 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.

3. 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

Appendix 2 Bulk Asbestos Sample Analysis



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

File Number: F0210-1689
Date: March 7, 2018

Attention: Mr. Doug Wells

PROJECT: 1224 CHASTER ROAD, GIBSONS, BC (FRANK WEST HALL)

SUBJECT: BULK ASBESTOS SAMPLE ANALYSIS

Dear Sir:

Please find attached our laboratory's results for analysis of material submitted for identification of Asbestos. Sample examination was conducted in accordance with the NIOSH 9002 analytical method using polarized light microscopy and dispersion staining techniques. The detection limit of this method is listed as <1%.

This report relates only to material tested and any extrapolation of the results by the client is the responsibility of the client. Samples collected by the client cannot be confirmed as representative of materials sampled.

If Asbestos containing materials (ACM – defined by WorkSafe BC as containing at least 0.5% Asbestos and >0% for Vermiculite insulation) are identified in this report and remediation is indicated, the requirements of the B. C. Occupational Health & Safety Regulation Part 6.0 and related Guidelines should be met. This will require completion of a Risk Assessment by a 'Qualified Person' as described in Section 6.6.4. of the Regulations.

This report is not a 'Hazardous Materials Assessment' (Report), as defined in Section 20.112. In addition to this report, WorkSafe BC may require Section 20.112 to be met prior to commencement of work.

Samples will be disposed of after one month, unless otherwise instructed by you. If further clarification is required, please contact the undersigned. Thank you for the opportunity to be of service to you.

Yours truly,

LEA HEALTH, SAFETY & ENVIRONMENTAL

Laurie Clark, B.Sc.
Hygiene Lab Analyst
EPA-AHERA Building Inspector #15-3672
Email: lclark@lewkowich.com



Johanne Picard, B.Sc., RPIH
Supervising Analyst
EPA-AHERA Building Inspector #13-0407
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Attachments (2): Certificate of Analysis
Chain of Custody

Lewkowich Engineering Associates Ltd.

07 Mar 2018

Bulk Asbestos Certificate of Analysis

Project #: F0210-1689 **Client:** IRC Building Sciences Group **Site Address:** 1224 Chaster Road, Gibsons, BC (Frank West Hall) **Sampled By:** Nelson Roofing

Analyzed in accordance with NIOSH 9002 Asbestos (Bulk) by PLM

(Note: Estimated Limit of Detection (LOD) is <1% asbestos)

Legend:

ND Not Detected

Lab Sample #	Sample Description	Location	Phase Description	Phase %	Asbestos Type	Asbestos %	Other Material Type	Other Material	Analyst
F0210-1689-1	Metal Flashing	Roof	Sample for Lead Analysis Only						
F0210-1689-2	Felt Underlay	Roof	Paper - Black	100	NO	ND	Fibrous(Cellulose)/Non-Fibrous(80/20)	100	LC

LEA Project No. F0210-1689

LEA Lewkowich Engineering Associates Ltd.
Hygiene Laboratory Chain of Custody Form

Company: <u>IBC Building Sciences</u>		Report To:	
Billing Contact: <u>DOUG WELLS, project manager</u>	<input type="checkbox"/> Phone	<input checked="" type="checkbox"/> e-mail	
Billing Address: <u>250-2900 Westminister Hwy</u>	<input type="checkbox"/> Fax	<input type="checkbox"/> Mail	
City, Province: <u>Richmond BC</u>	Postal Code: <u>V6V0A8</u>	Insurance Claim?	
Phone: <u>604 295 8070</u>	Cell: <u>604 250 2986</u>	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Report to (e-mail): <u>dwells@icgroup.com</u>			

ASBESTOS BULK: <input type="checkbox"/> SAME DAY (ABS) \$70 + Tax * <input type="checkbox"/> NEXT DAY (ABN) \$30 + Tax <input checked="" type="checkbox"/> REGULAR 5 DAY (AB) \$35 + Tax <i>per sample</i>	FUNGAL BULK / TAPE : <input type="checkbox"/> SAME DAY (FBS/TLS) \$20 + Tax * <input type="checkbox"/> NEXT DAY (FBM/TLN) \$25 + Tax FUNGAL AIR (SPORE TRAP): <input type="checkbox"/> SAME DAY (FAS) \$95 + Tax * <input type="checkbox"/> REGULAR (FA) \$75 + Tax FUNGAL AIR (VIABLE): <input type="checkbox"/> REGULAR (FAV) \$35 + Tax/Shipping	LEAD PAINT: <input checked="" type="checkbox"/> SCREENING (XRF) \$30 + Tax <input type="checkbox"/> LEACHATE (TCLP) \$100 + Tax / Shipping <input type="checkbox"/> ICP / AAS (AAS) \$30 + Tax / Shipping <small>*Same Day Samples must be received by 13:00 (3 pm)</small>
AEROSOL FIBRE: <input type="checkbox"/> SAME DAY (AFS) \$70 + Tax <input type="checkbox"/> NEXT DAY (AFN) \$35 + Tax		

CLIENT PROJECT NUMBER:	SAMPLING ADDRESS:
	<u>FRANK WEST HALL 1224 CHASTER RD</u>
CLIENT PO #:	<u>SECHelt, BC Gibsons</u>
	Unit # House # Street City Prov

Sample #	Sample Type (eg. Texture)	Location (eg. Kitchen Ceiling)	Sampled By	Date Sampled
1	<u>metal flashing (500)</u>	<u>roof</u>	<u>Nelson Roofing</u>	<u>FEB 23</u>
2	<u>felt underlay</u>	<u>roof</u>	<u>Nelson Roofing</u>	<u>FEB 23</u>
3				
4				
5				
6				
7				
8				
9				
10				

Relinquished By: (PLEASE PRINT)		LABORATORY USE ONLY	
Name: <u>SEAN SANGER (LEA)</u>	Date/Time: <u>FEB 26 13:30</u>	Received By: <u>MJ (NORDA MD)</u>	
Name: <u>NELSON ROOFING</u>	Date/Time: <u>FEB 26 13:30</u>	Date: <u>1 Mar 2018</u>	
Name:	Date/Time:	Time (24 hr): <u>1000</u>	

Appendix 3
Drawings
(included as a separate document)