



INVITATION TO TENDER

FOR

**ROOF REPLACEMENT
Building 76
Project 1314144210P0007**

**CENTRAL EXPERIMENTAL FARM (CEF)
Agriculture and Agri-Food Canada (AAFC)
K.W. Neatby Building, Main Entrance
960 Carling Avenue
Ottawa, Ontario K1A 0C6**

SOLICITATION #13-1191

**Jean-Pierre Simard
Senior Contracts Officer
613 759-6157
jean-pierre.simard@agr.gc.ca**

**CLOSING: Monday September 23, 2013 at 02:00 p.m.
Eastern Daylight Saving Time (EDT)**

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SPECIAL INSTRUCTIONS TO BIDDERS (SI)

SI01 BID DOCUMENTS

- 1) The following are the bid documents:
 - a) Invitation to Tender - Page 1;
 - b) Special Instructions to Bidders;
 - c) General Instructions to Bidders;
 - d) Clauses & Conditions identified in "Contract Documents";
 - e) Drawings and Specifications;
 - f) Bid and Acceptance Form and related Appendice(s); and
 - g) Any amendment issued prior to solicitation closing.

Submission of a bid constitutes acknowledgement that the Bidder has read and agrees to be bound by these documents.

SI02 ENQUIRIES DURING THE SOLICITATION PERIOD

- 1) Enquiries regarding this bid must be submitted in writing as early as possible within the solicitation period to:

Jean-Pierre Simard
Senior Contracts Officer
Agriculture and Agri-Food Canada
960 Carling Ave. (K.W. Neatby building)
Ottawa, Ontario
K1A 0C6
Telephone: 613 759-6157
Facsimile: 613 759-7005
Jean-pierre.simard@agr.gc.ca

Except for the approval of alternative materials as described in G115 of the "General Instructions to Bidders", enquiries should be received no later than one (1) calendar day prior to the date set for solicitation closing to allow sufficient time to provide a response. Enquiries received after that time may not result in an answer being provided.

- 2) To ensure consistency and quality of the information provided to Bidders, the Contracting Officer shall examine the content of the enquiry and shall decide whether or not to issue an amendment.
- 3) All enquiries and other communications related to this bid sent throughout the solicitation period are to be directed **ONLY** to the Contracting Officer named herein. Failure to comply with this requirement may result in the bid being declared non-responsive.

SI03 SITE VISITS

It is recommended that Bidder or a representative of the Bidder visit the work site. Arrangements have been made for a tour of the work site. The site visit will be held on **Tuesday September 17, 2013 at 10:00 am** local time. Interested bidders are to meet at the **main entrance of K.W. Neatby building (building 20), 960 Carling Avenue, Ottawa, Ontario**. Bidders who do not attend will not be given an alternative appointment but they will not be precluded from submitting a bid. Any clarifications or changes to the bid solicitation resulting from the site visit will be included as an amendment to the bid solicitation.

SI04 REVISION OF BID

A bid may be revised by letter in accordance with G111 of the "General Instructions to Bidders".

SI05 BID RESULTS

Following solicitation closing, bidders may ask the results of the bid opening by calling the CEF at Telephone No. (613) 759-6157.

SI06 INSUFFICIENT FUNDING

In the event that the lowest compliant bid exceeds the amount of funding allocated for the Work, Canada in its sole discretion may:

- a) cancel the solicitation; or
- b) obtain additional funding and award the Contract to the Bidder submitting the lowest compliant bid; and/or
- c) negotiate a reduction in the bid price and/or scope of work of not more than 15% with the Bidder submitting the lowest compliant bid. Should an agreement satisfactory to Canada not be reached, Canada shall exercise option (a) or (b).

SI07 BID VALIDITY PERIOD

- 1) Canada reserves the right to seek an extension to the bid validity period prescribed in BA04 of the Bid and Acceptance Form. Upon notification in writing from Canada, Bidders shall have the option to either accept or reject the proposed extension.
- 2) If the extension referred to in paragraph 1) of SI07 is accepted, in writing, by all those who submitted bids, then Canada shall continue immediately with the evaluation of the bids and its approvals processes.
- 3) If the extension referred to in paragraph 1) of SI07 is not accepted in writing by all those who submitted bids then Canada shall, at its sole discretion, either
 - a) continue to evaluate the bids of those who have accepted the proposed extension and seek the necessary approvals; or
 - b) cancel the invitation to tender.
- 4) The provisions expressed herein do not in any manner limit Canada's rights in law or under GI10 of the "General Instructions to Bidders".

SI08 CONSTRUCTION DOCUMENTS

The successful contractor will be provided with one paper copy of the sealed and signed drawings, the specifications and the amendments upon acceptance of the offer. Obtaining more copies shall be the responsibility of the contractor including costs.

SI09 SECURITY CLEARANCE

This document does not contain a security requirement.

SI10 WEB SITES

The connection to some of the Web sites in the solicitation documents is established by the use of hyperlinks. The following is a list of the addresses of the Web sites:

Treasury Board Appendix L, Acceptable Bonding Companies:

<http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=14494§ion=text#appl>

Contracts Canada (Buy and Sell):

<https://www.achatsetventes-buyandsell.gc.ca/eng/welcome>

Canadian economic sanctions:

<http://www.international.gc.ca/sanctions/index.aspx?lang=eng>

Contractor Performance Evaluation Report (Form PWGSC-TPSGC 2913):

<http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/2913.pdf>

Certificate of Insurance (form PWGSC-TPSGC 357):

<http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/357.pdf>

SACC Manual:

<http://ccua-sacc.tpsgc-pwgsc.gc.ca/pub/acho-eng.jsp>

Schedules of Wage Rates for Federal Construction Contracts:

http://www.rhdcc-hrsdc.gc.ca/eng/labour/employment_standards/contracts/schedule/index.shtml

PWGSC, Industrial Security Services

<Http://ssi-iss.tpsgc-pwgsc.gc.ca/index-eng.html>

GENERAL INSTRUCTIONS TO BIDDERS (GI)

GI01 Code of Conduct and Certifications - Bid

1. Bidders must comply with the [Code of Conduct for Procurement](#). In addition to the [Code of Conduct for Procurement](#), bidders must:
 - a) respond to bid solicitations in an honest, fair and comprehensive manner,
 - b) accurately reflect their capacity to satisfy the requirements stipulated in the bid solicitations and resulting contracts,
 - c) submit bids and enter into contracts only if they will fulfill all obligations of the Contract.
2. Bidders further understand that, to ensure fairness, openness and transparency in the procurement process, the commission of certain acts or offences will render them ineligible to be awarded a contract. Canada will declare non-responsive any bid in respect of which the information herein requested is missing or inaccurate, or in respect of which the information contained in the certifications specified hereinafter is found to be untrue, in any respect, by Canada. If it is determined, after contract award, that the Bidder made a false declaration, Canada will have the right to terminate the Contract for default. The Bidder will be required to diligently maintain up-to-date the information herein requested. The Bidder and any of the Bidder's affiliates, will also be required to remain free and clear of any acts or convictions specified herein during the period of any contract arising from this bid solicitation.
3. For the purpose of this section, everyone, including but not limited to organizations, bodies corporate, societies, companies, firms, partnerships, associations of persons, parent companies, and subsidiaries, whether partly or wholly-owned, as well as individuals, and directors, are Bidder's affiliates if:
 - a. directly or indirectly either one controls or has the power to control the other, or
 - b. a third party has the power to control both.

Indicia of control, include, but are not limited to, interlocking management or ownership, identity of interests among family members, shared facilities and equipment, common use of employees, or a business entity created following the acts or convictions specified in this section which has the same or similar management, ownership, or principal employees, as the case may be.

4. Bidders who are incorporated, including those bidding as a joint venture, must provide with their bid or promptly thereafter a complete list of names of all individuals who are currently directors of the Bidder. Bidders bidding as sole proprietorship, including those bidding as a joint venture, must provide with their bid or promptly thereafter the name of the owner. Bidders bidding as societies, firms, or partnerships do not need to provide

lists of names. If the required names have not been received by the time the evaluation of bids is completed, Canada will inform the Bidder of a time frame within which to provide the information. Failure to comply will render the bid non-responsive. Providing the required names is a mandatory requirement for contract award.

Canada may, at any time, request that a Bidder provide properly completed and Signed Consent Forms ([Consent to a Criminal Record Verification form - PWGSC-TPSGC 229](#)) for any or all individuals aforementioned within the time specified. Failure to provide such Consent Forms within the time period provided will result in the bid being declared non-responsive.

5. The Bidder must diligently maintain an up-to-date list of names by informing Canada in writing of any change occurring during the validity period of the bid as well as during the period of any contract arising from this bid solicitation. The Bidder must also, when so requested, provide Canada with the corresponding Consent Forms.
6. By submitting a bid, the Bidder certifies that it is aware, and that its affiliates are aware, that Canada may request additional information, certifications, consent forms and other evidentiary elements proving identity or eligibility. Canada may also verify the information provided by the Bidder, including the information relating to the acts or convictions specified herein, through independent research, use of any government resources or by contacting third parties.
7. By submitting a bid, the Bidder certifies that neither the Bidder nor any of the Bidder's affiliates have directly or indirectly, paid or agreed to pay, and will not, directly or indirectly, pay a contingency fee to any individual for the solicitation, negotiation or obtaining of the Contract if the payment of the fee would require the individual to file a return under section 5 of the [Lobbying Act](#).
8. By submitting a bid, the Bidder certifies that no one convicted under any of the provisions under a) or b) are to receive any benefit under a contract arising from this bid solicitation. In addition, the Bidder certifies that except for those offences where a criminal pardon or a record suspension has been obtained or capacities restored by the Governor in Council, neither the Bidder nor any of the Bidder's affiliates has ever been convicted of an offence under any of the following provisions:
 - a. paragraph 80(1)(d) (*False entry, certificate or return*), subsection 80(2) (*Fraud against Her Majesty*) or section 154.01 (*Fraud against Her Majesty*) of the [Financial Administration Act](#), or
 - b. section 121 (*Frauds on the government and Contractor subscribing to election fund*), section 124 (*Selling or Purchasing Office*), section 380 (*Fraud*) for fraud committed against Her Majesty or section 418 (*Selling defective stores to Her Majesty*) of the [Criminal Code](#) of Canada, or
 - c. section 462.31 (*Laundering proceeds of crime*) or sections 467.11 to 467.13 (*Participation in activities of criminal organization*) of the [Criminal Code](#) of Canada, or
 - d. section 45 (*Conspiracies, agreements or arrangements between competitors*), 46 (*Foreign directives*) 47 (*Bid rigging*), 49 (*Agreements or arrangements of federal financial institutions*), 52 (*False or misleading representation*), 53 (*Deceptive notice of winning a prize*) under the [Competition Act](#), or
 - e. section 239 (*False or deceptive statements*) of the [Income Tax Act](#), or
 - f. section 327 (*False or deceptive statements*) of the [Excise Tax Act](#), or
 - g. section 3 (*Bribing a foreign public official*) of the [Corruption of Foreign Public Officials Act](#), or

- h. section 5 (*Trafficking in substance*), section 6 (*Importing and exporting*), or section 7 (*Production of substance*) of the [Controlled Drugs and Substance Act](#).
9. In circumstances where a criminal pardon or a record suspension has been obtained, or capacities have been restored by the Governor in Council, the Bidder must provide with its bid or promptly thereafter a copy of confirming documentation from an official source. If such documentation has not been received by the time the evaluation of bids is completed, Canada will inform the Bidder of a time frame within which to provide the information. Failure to comply will render the bid non-responsive.
10. Bidders understand that Canada may contract outside of the present solicitation process with a supplier who has been convicted of an offense enumerated under c) to h) of the paragraph hereinabove, or who is affiliated with someone who has been convicted of an offense enumerated under c) to h) of the paragraph hereinabove, when required to do so by law or legal proceedings, or when Canada considers it necessary to the public interest for reasons which include, but are not limited to:
- o Only one person is capable of performing the contract;
 - o Emergency;
 - o National security;
 - o Health and safety;
 - o Economic harm;

Canada reserves the right to impose additional conditions or measures to ensure the integrity of the procurement process.

GI02 Completion of Bid

1. The bid shall be
 - a. submitted on the Bid and Acceptance Form provided in the solicitation or a clear and legible reproduced copy of such Bid and Acceptance Form that must be identical in content and format to the Bid and Acceptance Form provided in the solicitation;
 - b. based on the Bid Documents listed in the Special Instructions to Bidders;
 - c. correctly completed in all respects;
 - d. signed by a duly authorized representative of the Bidder; and
 - e. accompanied by:
 - i. bid security as specified in GI08; and
 - ii. any other document or documents specified elsewhere in the solicitation where it is stipulated that said documents are to accompany the bid.
2. Subject to paragraph 6) of GI11, any alteration to the pre-printed or pre-typed sections of the Bid and Acceptance Form, or any condition or qualification placed upon the bid shall be cause for disqualification. Alterations, corrections, changes or erasures made to statements or figures entered on the Bid and Acceptance Form by the Bidder shall be initialed by the person or persons signing the bid. Alterations, corrections, changes or erasures that are not initialed shall be deemed void and without effect.
3. Unless otherwise noted elsewhere in the Bid Documents, facsimile copies of bids are not acceptable.

GI03 Identity or Legal Capacity of the Bidder

1. In order to confirm the authority of the person or persons signing the bid or to establish the legal capacity under which the Bidder proposes to enter into Contract, any Bidder who carries on business in other than its own personal name shall, if requested by Canada, provide satisfactory proof of
 - a. such signing authority; and
 - b. the legal capacity under which it carries on business;

prior to contract award. Proof of signing authority may be in the form of a certified copy of a resolution naming the signatory(ies) that is (are) authorized to sign this bid on behalf of the corporation or partnership. Proof of legal capacity may be in the form of a copy of the articles of incorporation or the registration of the business name of a sole proprietor or partnership.

GI04 Applicable Taxes

1. "Applicable Taxes" means the Goods and Services Tax (GST), the Harmonized Sales Tax (HST), and any provincial tax, by law, payable by Canada such as, the Quebec Sales Tax (QST) as of April 1, 2013.

GI05 Capital Development and Redevelopment Charges

1. For the purposes of GC1.8, "Laws, Permits and Taxes", in the General Conditions of the Contract, only fees or charges directly related to the processing and issuing of building permits shall be included. The Bidder shall not include any monies in the bid amount for special municipal development, redevelopment or other fees or charges which a municipal authority may seek as a prerequisite to the issuance of building permits.

GI06 Registry and Pre-qualification of Floating Plant

1. Dredges or other floating plant to be used in the performance of the Work must be on Canadian registry. For dredges or other floating plant that are not of Canadian make or manufacture, the Bidder must obtain a certificate of qualification from Industry Canada as described in the Floating Plant Appendix of the Bid and Acceptance Form, and this certificate must accompany the bid. Plant so qualified by Industry Canada may be accepted on this project

GI07 Listing of Subcontractors and Suppliers

1. Notwithstanding any list of Subcontractors that the Bidder may be required to submit as part of the bid, the Bidder shall, within forty-eight (48) hours of receipt of a notice to do so, submit all information requested in the said notice including the names of Subcontractors and Suppliers for the part or parts of the Work listed. Failure to do so shall result in the disqualification of its bid.

GI08 Bid Security Requirements

1. The Bidder shall submit bid security with the bid in the form of a bid bond or a security deposit in an amount that is equal to not less than 10 percent of the bid amount. The maximum amount of bid security required with any bid is \$2,000,000.

2. A bid bond (form [PWGSC-TPSGC 504](#)) shall be in an approved form, properly completed, with original signatures and issued by an approved company whose bonds are acceptable to Canada either at the time of solicitation closing or as identified in Treasury Board Appendix L, [Acceptable Bonding Companies](#).
3. A security deposit shall be an original, properly completed, signed where required and be either
 - a. a bill of exchange, bank draft or money order made payable to the Receiver General for Canada and certified by an approved financial institution or drawn by an approved financial institution on itself; or
 - b. bonds of, or unconditionally guaranteed as to principal and interest by, the Government of Canada.
4. For the purposes of subparagraph 3. a. of GI08
 - a. a bill of exchange is an unconditional order in writing signed by the Bidder and addressed to an approved financial institution, requiring the said institution to pay, on demand, at a fixed or determinable future time a sum certain of money to, or to the order of, the Receiver General for Canada;
 - b. if a bill of exchange, bank draft or money order is certified by or drawn on an institution or corporation other than a chartered bank, it must be accompanied by proof that the said institution or corporation meets at least one of the criteria described in subparagraph 4.c. of GI08, either by letter or by a stamped certification on the bill of exchange, bank draft or money; and
 - c. An approved financial institution is
 - i. a corporation or institution that is a member of the Canadian Payments Association as defined in the [Canadian Payments Act](#);
 - ii. a corporation that accepts deposits that are insured, to the maximum permitted by law, by the Canada Deposit Insurance Corporation or the "Autorité des marchés financiers";
 - iii. a corporation that accepts deposits from the public if repayment of the deposit is guaranteed by Her Majesty the Queen in right of a province;
 - iv. a corporation, association or federation incorporated or organized as a credit union or co-operative credit society that conforms to the requirements of a credit union which are more particularly described in paragraph 137(6) of the [Income Tax Act](#); or
 - v. Canada Post Corporation.
5. Bonds referred to in subparagraph 3. b. of GI08 shall be provided on the basis of their market value current at the date of solicitation closing, and shall be
 - a. payable to bearer;

- b. accompanied by a duly executed instrument of transfer of the bonds to the Receiver General for Canada in the form prescribed by the Domestic Bonds of Canada Regulations; or
 - c. registered as to principal or as to principal and interest in the name of the Receiver General for Canada pursuant to the Domestic Bonds of Canada Regulations.
- 6. As an alternative to a security deposit an irrevocable standby letter of credit is acceptable to Canada and the amount shall be determined in the same manner as a security deposit referred to above.
- 7. An irrevocable standby letter of credit referred to in paragraph 8) of GI08 shall
 - a. be an arrangement, however named or described, whereby a financial institution (the "Issuer") acting at the request and on the instructions of a customer (the "Applicant") or on its own behalf,
 - i. is to make a payment to, or to the order of, the Receiver General for Canada as the beneficiary;
 - ii. is to accept and pay bills of exchange drawn by the Receiver General for Canada;
 - iii. authorizes another financial institution to effect such payment or accept and pay such bills of exchange; or
 - iv. authorizes another financial institution to negotiate against written demand(s) for payment provided that the terms and conditions of the letter of credit are complied with;
 - b. state the face amount which may be drawn against it;
 - c. state its expiry date;
 - d. provide for sight payment to the Receiver General for Canada by way of the financial institution's draft against presentation of a written demand for payment signed by the Departmental Representative identified in the letter of credit by his/her office;
 - e. provide that more than one written demand for payment may be presented subject to the sum of those demands not exceeding the face value of the letter of credit;
 - f. provide that it is subject to the International Chamber of Commerce (ICC) *Uniform Customs and Practice (UCP) for Documentary Credits, 2007 Revision*, ICC Publication No. 600, Pursuant to the ICC UCP, a credit is irrevocable even if there is no indication to that effect; and
 - g. be issued or confirmed, in either official language, by a financial institution which is a member of the Canadian Payments Association and is on the

letterhead of the Issuer or Confirmer. The format is left to the discretion of the Issuer or Confirmer.

8. Bid security shall lapse or be returned as soon as practical following:
 - a. the solicitation closing date, for those Bidders submitting non-compliant bids; and
 - b. the administrative bid review, for those Bidders submitting compliant bids ranked fourth to last on the schedule of bids; and
 - c. the award of contract, for those Bidders submitting the second and third ranked bids; and
 - d. the receipt of contract security, for the successful Bidder; or
 - e. the cancellation of the solicitation, for all Bidders.
9. Notwithstanding the provisions of paragraph 8 of GI08 and provided more than three compliant bids have been received, if one or more of the bids ranked third to first is withdrawn or rejected for whatever reason then Canada reserves the right to hold the security of the next highest ranked compliant bid in order to retain the bid security of at least three valid and compliant bids.

GI09 Submission of Bid

1. The Bid and Acceptance Form, duly completed, shall be enclosed and sealed in an envelope provided by the Bidder, and shall be addressed and submitted to the office designated on the Front Page "Invitation to Tender" for the receipt of bids. The bid must be received on or before the date and time set for solicitation closing.
2. Unless otherwise specified in the Special Instructions to Bidders
 - a. the bid shall be in Canadian currency;
 - b. exchange rate fluctuation protection is not offered; and
 - c. any request for exchange rate fluctuation protection shall not be considered.
3. Prior to submitting the bid, the Bidder shall ensure that the following information is clearly printed or typed on the face of the bid envelope:
 - a. Solicitation Number;
 - b. Name of Bidder;
 - c. Return address; and
 - d. Closing Date and Time.
4. Timely and correct delivery of bids is the sole responsibility of the Bidder.

GI10 Revision of Bid

1. A bid submitted in accordance with these instructions may be revised by letter provided the revision is received at the office designated for the receipt of bids, on or before the date and time set for the closing of the solicitation. The letter shall bear the Bidder's letterhead or a signature that identifies the Bidder.
2. A revision to a bid that includes unit prices must clearly identify the change(s) in the unit price(s) and the specific item(s) to which each change applies.

3. A letter submitted to confirm an earlier revision shall be clearly identified as a confirmation.
4. Failure to comply with any of the above provisions shall result in the rejection of the non-compliant revision(s) only. The bid shall be evaluated based on the original bid submitted and all other compliant revision(s).

GI11 Rejection of Bid

1. Canada may accept any bid, whether it is the lowest or not, or may reject any or all bids.
2. Without limiting the generality of paragraph 1) of GI11, Canada may reject a bid if any of the following circumstances is present:
 - a. the Bidder's bidding privileges are suspended or are in the process of being suspended;
 - b. the bidding privileges of any employee or subcontractor included as part of the bid are suspended or are in the process of being suspended, which suspension or pending suspension would render that employee or subcontractor ineligible to bid on the Work, or the portion of the Work the employee or subcontractor is to perform;
 - c. the Bidder is bankrupt, or where for whatever reason, its activities are rendered inoperable for an extended period;
 - d. evidence, satisfactory to Canada, of fraud, bribery, fraudulent misrepresentation or failure to comply with any law protecting individuals against any manner of discrimination, has been received with respect to the Bidder, any of its employees or any subcontractor included as part of its bid;
 - e. evidence satisfactory to Canada that based on past conduct or behavior, the Bidder, a sub-contractor or a person who is to perform the Work is unsuitable or has conducted himself/herself improperly;
 - f. with respect to current or prior transactions with Canada
 - i. Canada has exercised, or intends to exercise, the contractual remedy of taking the work out of the contractor's hands with respect to a contract with the Bidder, any of its employees or any subcontractor included as part of its bid; or
 - ii. Canada determines that the Bidder's performance on other contracts is sufficiently poor to jeopardize the successful completion of the requirement being bid on.
3. In assessing the Bidder's performance on other contracts pursuant to subparagraph 2.f. i & ii of GI11, Canada may consider, but not be limited to, such matters as:
 - a. the quality of workmanship in performing the Work;
 - b. the timeliness of completion of the Work;
 - c. the overall management of the Work and its effect on the level of effort demanded of the department and its representative; and
 - d. the completeness and effectiveness of the Contractor's safety program during the performance of the Work.
4. Without limiting the generality of paragraphs 1), 2) and 3) of GI11, Canada may reject any bid based on an unfavourable assessment of the

- a. adequacy of the bid price to permit the work to be carried out and, in the case of a bid providing prices per unit, whether each such price reasonably reflects the cost of performing the part of the work to which that price applies;
 - b. Bidder's ability to provide the necessary management structure, skilled personnel, experience and equipment to perform competently the work under the Contract; and
 - c. Bidder's performance on other contracts.
5. When Canada intends to reject a bid pursuant to a provision of paragraphs 1), 2), 3) or 4) of G111, other than subparagraph 2)(a) of G111, the Contracting Authority will inform the Bidder and provide the Bidder ten (10) days within which to make representations, before making a final decision on the bid rejection.
6. Canada may waive informalities and minor irregularities in bids received if Canada determines that the variation of the bid from the exact requirements set out in the Bid Documents can be corrected or waived without being prejudicial to other Bidders.

G112 Bid Costs

1. No payment will be made for costs incurred in the preparation and submission of a bid in response to the bid solicitation. Costs associated with preparing and submitting a bid, as well as any costs incurred by the Bidder associated with the evaluation of the bid, are the sole responsibility of the Bidder.

G113 Procurement Business Number

1. Bidders are required to have a Procurement Business Number (PBN) before contract award. Bidders may register for a PBN in the Supplier Registration Information system on the [Contracts Canada](#) Web site. For non-Internet registration, Bidders may contact the nearest [Supplier Registration Agent](#).

G114 Compliance with Applicable Laws

1. By submission of a bid, the Bidder certifies that the Bidder has the legal capacity to enter into a contract and is in possession of all valid licences, permits, registrations, certificates, declarations, filings, or other authorizations necessary to comply with all federal, provincial and municipal laws and regulations applicable to the submission of the bid and entry into any ensuing contract for the performance of the work.
2. For the purpose of validating the certification in paragraph 1) of G114, a Bidder shall, if requested, provide a copy of every valid licence, permit, registration, certificate, declaration, filing or other authorization listed in the request, and shall provide such documentation within the time limit(s) set out in the request.
3. Failure to comply with the requirements of paragraph 2) of G114 shall result in disqualification of the bid.

G115 Approval of Alternative Materials

1. When materials are specified by trade names or trademarks, or by manufacturers' or suppliers' names, the bid shall be based on use of the named materials. During the solicitation period, alternative materials may be considered provided full technical data is received in writing by the Contracting Officer at least ten (10) calendar days prior to the

solicitation closing date. If the alternative materials are approved for the purposes of the bid, an addendum to the bid documents shall be issued.

GI16 Performance Evaluation

1. Bidders shall take note that the performance of the Contractor during and upon completion of the work shall be evaluated by Canada. The evaluation shall be based on the quality of workmanship; timeliness of completion of the work; project management, contract management and management of health and safety. Should the Contractor's performance be considered unsatisfactory, the Contractor's bidding privileges on future work may be suspended indefinitely.
2. The form [PWGSC-TPSGC 2913](#), SELECT - Contractor Performance Evaluation Report Form, is used to record the performance.

GI17 Conflict of Interest - Unfair Advantage

1. In order to protect the integrity of the procurement process, bidders are advised that Canada may reject a bid in the following circumstances:
 - a. if the Bidder, any of its subcontractors, any of their respective employees or former employees was involved in any manner in the preparation of the bid solicitation or in any situation of conflict of interest or appearance of conflict of interest;
 - b. if the Bidder, any of its subcontractors, any of their respective employees or former employees had access to information related to the bid solicitation that was not available to other bidders and that would, in Canada's opinion, give or appear to give the Bidder an unfair advantage.
2. The experience acquired by a bidder who is providing or has provided the goods and services described in the bid solicitation (or similar goods or services) will not, in itself, be considered by Canada as conferring an unfair advantage or creating a conflict of interest. This bidder remains however subject to the criteria established above.
3. Where Canada intends to reject a bid under this section, the Contracting Authority will inform the Bidder and provide the Bidder an opportunity to make representations before making a final decision. Bidders who are in doubt about a particular situation should contact the Contracting Authority before bid closing. By submitting a bid, the Bidder represents that it does not consider itself to be in conflict of interest nor to have an unfair advantage. The Bidder acknowledges that it is within Canada's sole discretion to determine whether a conflict of interest, unfair advantage or an appearance of conflict of interest or unfair advantage exists.

SUPPLEMENTARY CONDITIONS (SC)

SC01 INSURANCE TERMS

IT2.2 of R2910D is deleted and replaced with the following:

1. The policy shall insure the Contractor and shall include Her Majesty the Queen in right of Canada, represented by the Minister of Agriculture and Agri-Food Canada as an additional

Insured, with respect to liability arising out of the operations of the contractor with regard to the work.

IT3.3 of R2910D is deleted and replaced with the following:

1. The policy shall insure the Contractor and shall include Her Majesty the Queen in right of Canada, represented by the Minister of Agriculture and Agri-Food Canada.

CONTRACT DOCUMENTS (CD)

1) The following are the contract documents:

- a) Contract Page(s) when signed by Canada;
- b) Duly completed Bid and Acceptance Form and any Appendices attached thereto;
- c) Drawings and Specifications;
- d) General Conditions and clauses
 - GC1 General Provisions R2810D (2013-04-25);
 - GC2 Administration of the Contract R2820D (2012-07-16);
 - GC3 Execution and Control of the Work R2830D (2010-01-11);
 - GC4 Protective Measures R2840D (2008-05-12);
 - GC5 Terms of Payment R2850D (2010-01-11);
 - GC6 Delays and Changes in the Work R2865D (2013-04-25);
 - GC7 Default, Suspension or Termination of Contract R2870D (2008-05-12);
 - GC8 Dispute Resolution R2880D (2012-07-16);
 - GC9 Contract Security R2890D (2012-07-16);
 - GC10 Insurance R2900D (2008-05-12);Supplementary Conditions
 - Insurance Terms R2910D (2008-12-12);
 - Fair Wages and Hours of Labour - Labour Conditions R2940D (2012-07-16);
 - Allowable Costs for Contract Changes under GC6.4.1 R2950D (2007-05-25);
 - Schedules of Wage Rates for Federal Construction Contracts;
- e) Any amendment issued or any allowable bid revision received before the date and time set or solicitation closing;
- f) Any amendment incorporated by mutual agreement between Canada and the Contractor before acceptance of the bid; and
- g) Any amendment or variation of the contract documents that is made in accordance with the General Conditions.

2) The documents identified by title, number and date above are incorporated by reference and are set out in the Standard Acquisition Clauses and Conditions (SACC) Manual, issued by Public Works and Government Services Canada (PWGSC). The SACC Manual is available on the PWGSC Web site: <https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>

3) Schedules of Wage Rates for Federal Construction Contracts are included by reference and may be accessed from the Web site: http://www.rhdcc-hrsdc.gc.ca/eng/labour/employment_standards/contracts/schedule/index.shtml

4) The language of the contract documents is the language of the Bid and Acceptance Form submitted.

BID AND ACCEPTANCE FORM (BA)

BA01 IDENTIFICATION

ROOF REPLACEMENT
Building 76, CEF Ottawa
Project #1314144210P0007
Solicitation # 13-1191

BA02 BUSINESS NAME AND ADDRESS OF BIDDER

Name: _____

Address: _____

Telephone: _____

Fax: _____

Email: _____

PBN: _____

BA03 THE OFFER

The Bidder offers to Canada to perform and complete the Work for the above named project in accordance with the Bid Documents for the **TOTAL BID AMOUNT INDICATED IN APPENDIX 1**.

BA04 BID VALIDITY PERIOD

The bid shall not be withdrawn for a period of 30 days following the date of solicitation closing.

BA05 ACCEPTANCE AND CONTRACT

Upon acceptance of the Contractor's offer by Canada, a binding Contract shall be formed between Canada and the Contractor. The documents forming the Contract shall be the contract documents identified in Contract Documents (CD).

BA06 CONSTRUCTION TIME

The Contractor shall perform and complete the Work within 5 weeks from the date of notification of acceptance of the offer.

BA07 BID SECURITY

The Bidder is enclosing bid security with its bid in accordance with GI08 - Bid Security Requirements of the General Instructions to Bidders (GI).

BA07 SIGNATURE

Name and title of person authorized to sign on behalf of Bidder (Type or print)

Signature

Date

APPENDIX 1 - COMBINED PRICE FORM

- 1) The prices per unit shall govern in establishing the Total Extended Amount. Any arithmetical errors in this Appendix will be corrected by Canada.
- 2) Canada may reject the bid if any of the prices submitted do not reasonably reflect the cost of performing the part of the work to which that price applies.

LUMP SUM

The Lump Sum Amount designates Work to which a Lump Sum Arrangement applies.

(a) Work included in the Lump Sum Amount represents all work not included in the unit price table.

LUMP SUM AMOUNT (LSA) Excluding GST / HST

UNIT PRICE TABLE

The Unit Price Table designates Work to which a Unit Price Arrangement applies.

- (a) Work included in each item is as described in the referenced specification section.
- (b) The Price per Unit shall not include any amounts for Work that is not included in that unit price Item.

Item	Specification Reference	Class of Labour, Plant or Material	Unit of Measurement	Estimated Quantity (EQ)	Price per Unit GST/HST extra (PU)	Extended amount GST/HST extra (EQ x PU)
1	01 11 00	Roof decking	m ²	10 m ²		
TOTAL EXTENDED AMOUNT (TEA) Excluding GST / HST						

TOTAL BID AMOUNT (LSA +TEA) Excluding GST / HST



Agriculture and
Agri-Food Canada

Agriculture et
Agroalimentaire Canada

DRAWINGS AND SPECIFICATIONS

#13-1191

FOR

**ROOF REPLACEMENT
Building 76
Project 1314144210P0007**

**CENTRAL EXPERIMENTAL FARM (CEF)
Agriculture and Agri-Food Canada (AAFC)
960 Carling Avenue
Ottawa, Ontario K1A 0C6**

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PART 1 - GENERAL

1.1 General

- .1 Accept instructions only from the Consultant and/or sources designated by the Consultant.
- .2 The building shall remain in use in areas not immediately affected by the work. Ensure that normal building operations and maintenance may be carried out without disruption, except as otherwise noted herein or stated in the Bid.
- .3 Work shall be allowed only from 8a.m. to 5p.m., Monday to Friday. The work shall be performed according to the start date and duration given in the Bid Document.

1.2 Protection of Work, Property and Persons

- .1 Supply, install and maintain a construction barrier around work area consisting of 8 ft. high portable chain link fence
- .2 Maintain all emergency and service access routes clear at all times. Provide barricades and signs necessary to direct vehicular and pedestrian traffic around construction areas at all times.
- .3 Before commencing work, identify all paths for dust, fumes or odours generated by the work to penetrate interior spaces. These shall include make-up air intakes, ventilation/exhaust openings for service rooms such as generator or hydro vault rooms, doors, windows, and pipe or cable penetrations. Take measures such as enclosing, sealing and/or providing sustained negative pressure to prevent dust, fume or odour ingress. If required, coordinate temporary shut-down of mechanical equipment by Owner.
- .4 Be responsible for damage caused or clean-up required by dispersion of dust generated by the work.
- .5 Before commencing work, inspect all building components, including drains, lights, windows, screens, doors, etc. within the area of the work. Submit a written list if there is existing damage, or items not functioning.
- .6 Receive, be responsible for, and promptly arrange all details of compensation for all damage existing after the work which was not recorded prior to the work. Unless dealt with promptly by the Contractor, the Contractor will be responsible for costs for time of Owner's or Consultant's personnel and other costs incurred for claims not handled by the Contractor. This includes costs for correction of deficiencies paid for by the Owner.
- .7 The Contractor shall assume all responsibility for any damage resulting from the use of the building's drainage system to dispose of construction water irrespective of the drain system condition.
- .8 Ensure the building envelope affected by the work is made water-tight prior to adverse weather, and at the end of each day, to prevent interior leakage.

1.3 Progress of Work and Schedule

- .1 Monitor compliance with the contract schedule on an ongoing basis.
- .2 At no time shall the size of the work crew be decreased from the size indicated on the project schedule.
- .3 If unit price items increase by more than 30%, or should unusual weather or other unforeseen conditions affect the project schedule, submit a revised schedule to reflect approved changes to the project schedule.
- .4 If the Owner or Consultant, at any time, considers the number of workers, equipment or materials to be insufficient to maintain the Contract schedule, the Owner, through the Consultant, may, in writing, order the Contractor to work weekends/and or additional hours or provide additional workers, equipment, or materials as the Owner and Consultant may think necessary and in such longer period as may be fixed by any such order at no additional cost to the Owner in order that the Work be performed according to the terms of the Contract. Should the Contractor fail to comply with the order, the Contractor shall be considered to be in default of the Contract.
- .5 Should the Contractor fail to meet the project schedule as a result of conditions under their control, the Owner reserves the right to deduct costs for additional time required by the Consultant from amounts owed to the Contractor.
- .6 Where temperature sensitive work must take place and environmental conditions are not likely to be within the specified limits, and where it is not feasible to provide heat (as agreed to by the Contractor and Consultant), and where the Manufacturer has provided the Contractor with approval to proceed with the work, proceed only with written authorization from the Consultant. At least five days before the work is to take place, submit Manufacturer's written instructions to the Consultant. The Manufacturer's written instructions must include the revised environmental condition limits, details of required modifications to products or application procedures, and risks associated with proceeding under the revised conditions. The Consultant is not obliged to authorize the change.

1.4 Project Supervision and Coordination

- .1 Ensure that a qualified foreman, capable of communicating effectively in the English language, familiar with the requirements of these specifications, is on site at all times, including during subcontractors' activities.
- .2 Be aware that the breakdown of the specification into sections does not represent any actual division of the work. Be responsible for coordination between items of work which would be covered under separate specification sections. Coordinate and be responsible for the work of the various sub-trades.
- .3 Take reasonable measures to control noise, dust, smoke, and odours during construction. Control execution of all work to minimize interference of occupants' use of the building. Be responsible for workers' activities while on the site.
- .4 Conform to all By-Laws and all Legislated requirements including those related to labour, noise and the environment.

-
- .5 Maintain at the job site one copy, including all amendments, of each of the following:
 - .1 Contract drawings and specifications
 - .2 Site Visit Reports issued by Consultant
 - .3 Additional Drawings issued by Consultant
 - .4 Contemplated Change Orders and Change Orders
 - .5 Material Test Reports
 - .6 Accurate daily records of all work performed, weather and labour force
 - .7 Manufacturer's specifications for all products to be used
 - .8 Proof of WHMIS training for all site personnel
 - .9 Product data sheets to meet the WHMIS requirements
 - .10 Occupational Health and Safety Act and Site Specific Safety Plan
 - .6 Notify all staff and sub-contractors that the Contractor is entirely responsible for site safety. No actions or lack of action by the Owner or Consultant shall be deemed to be an instruction related to safety of the workplace.
 - .7 Drawings are, in part, diagrammatic and are intended to convey the scope of work and indicate general and approximate locations and arrangement of work. Obtain more accurate information about locations, arrangements and sizes from actual conditions on site.
 - .8 When site conditions require reasonable changes to the drawings, obtain the Consultant's approval prior to making such changes.

1.5 Applicable Laws, Regulations and Standards

- .1 Perform all work in accordance with current Code requirements and local and municipal by-laws.
- .2 All Standards referred to shall be the current editions as amended at the date of issue of Contract Documents.
- .3 The Contractor is responsible for obtaining and paying for all building permits, street permits, power line protection, damage deposits, etc., as required.
- .4 The Contractor is responsible for notifying the proper municipal inspector in advance (as specified by the inspector) to complete review of any project component the local municipal authority requires. Ensuring that correct municipal reviews are completed shall be solely the Contractor's responsibility. Additional work to expose or re-do uninspected work shall be completed by the Contractor at their expense.

1.6 Substitutions

- .1 Submit in writing, using the Request for Substitution form approved by the Consultant, any requests for substitutions to materials and/or installations specified and/or stated in the bid documents, at least ten working days prior to the intended application.

- .2 Submit information regarding the proposed substitution, including the reason for the change, the benefit to the Owner, manufacturer data sheets, independent test reports, performance differences compared with the specifications, and the amount of credit offered.
- .3 Should the number of Requests for Substitutions be unreasonable, the Consultant may refuse to consider further requests unless the Contractor agrees to pay for the Consultant's evaluation. The agreed fee will be deducted by the Owner from the amounts owed to the Contractor and paid to the Consultant.

1.7 Project Meetings

- .1 At least one week prior to start of work, attend a meeting between the Consultant, the Owner and /or Owner's representative and the Contractor's Project Manager and Site Superintendent to discuss the work.
- .2 Attend regular site meetings with the Consultant, the Owner and /or Owner's representative at a mutually agreeable time for the discussion of progress of the work and to resolve any difficulties.

1.8 Quality Assurance

- .1 Make all measurements required to perform the work. Determine site dimensions and levels so that all new work is installed to correct sizes.
- .2 Maintain all work completed or in progress in its condition as accepted.
- .3 All work shall meet or exceed the more stringent of the manufacturer's requirements or the requirements of this Specification.

1.9 Construction Review

- .1 The Contractor shall notify the Consultant and inspection and testing agents not less than 48 hours prior to each part of work being ready for review or testing. Work which requires review or testing shall not be performed on weekends or holidays unless previously agreed to.
- .2 The Contractor shall be responsible for payment of costs if the work is not ready when stated and if the Consultant and inspection and testing agency are not given sufficient notice of such delay.
- .3 The Owner reserves the right to deduct from the Contractor amounts for extra inspection and testing by the Consultant as required for certification of payment of work done to repair a deficiency.

1.10 Temporary Facilities

- .1 Provide a means of direct communication with the site to permit continuous contact on a daily basis.

-
- .2 Provide temporary sanitary facilities and maintain in a sanitary condition. Site facilities shall not be used by the Contractor's forces.
 - .3 Temporary electrical power for hand held equipment will be provided free of charge by the Owner. Arrange and pay for any usage and connection costs required for all other equipment. Do not connect to the building's power supply without written permission of building management.
 - .4 The existing water supply from existing hose bibs at the site may be used free of charge. Any water required in excess of this supply shall be metered and paid for by the Contractor. Be responsible for connecting to the existing services. Do not use fire system without written permission of building management. Advise Building Operations/Property Management of any procedures that may cause fire alarms to activate.
 - .5 With the exception of safety/instruction signs and notices, no signs or advertising shall be permitted on the site or equipment except as authorized by the Owner. Safety/instruction signs and notices shall be posted in accordance with current Code requirements and local and municipal by-laws. Maintain approved signs and notices in good condition for duration of work.

1.11 Materials and Equipment

- .1 Deliver all materials to the site in their original unopened containers, with labels intact. Where applicable, check material expiry dates. Immediately dispose of all materials older than their expiration date away from the site.
- .2 Store all materials and equipment in accordance with manufacturer's written requirements, and in a dry, secure and protected manner which will not overload the structure and shall prevent vandalism or unauthorized use. Storage locations shall be approved in advance by the Owner.
- .3 Be responsible for the security of all materials and equipment. Make no claims for theft or damage to the Owner.
- .4 Non-specified materials shall not be brought to site. Remove any non-specified materials from site within 24 hours upon request by the Consultant.

1.12 Waste Management

- .1 Unless otherwise specified, salvaged material resulting from the Construction shall become the property of the Contractor who must dispose of it away from the site in a timely manner. Storage locations shall be approved in advance by the Owner.
- .2 Separate recyclable and toxic waste materials from the waste stream. Deliver to a local waste management facility.

1.13 Deficiencies

For any deficiencies in the work, the Contractor shall submit a written proposal for the repair of the deficiency. If engineering design is required, a qualified Professional Engineer shall be engaged by the Contractor. All testing required shall be paid for by the Contractor.

1.14 Project Closeout

- .1 Flush clear all drains affected by the work.
- .2 Clean site of all materials and debris created by the Construction. Damaged or scratched windows must be replaced at the Contractor's cost.
- .3 Submit written acceptance that utility companies have inspected services to their satisfaction.
- .4 Attend a final walk-through with the Owner and Consultant. The Consultant will record identified incomplete and deficient work on a punchlist.
- .5 Make good all known deficiencies in the work.
- .6 Notify Consultant of readiness for final inspection only after completion of these items.
- .7 The Consultant will review completion of punchlist items during one review. Additional reviews required to check un-rectified deficiencies or work that remains incomplete will be charged back to the Contractor. These charges will be deducted by the Owner from the Contractor's progress payments and paid from those funds to the Consultant.

1.15 Emergencies

- .1 In an emergency affecting or threatening the safety of life, the work or adjoining property, the Owner and Consultant have authority to stop the progress of the work.
- .2 Provide the Owner and Consultant with the name and telephone number of a person that is available and may be contacted during off hours, weekends and holidays in case of emergency.

End of Section 01 00 00

1. OBJECTIVE

Work under this contract is to replace the roofing at the Central Experimental Farm Building No.76 (Cereal Barn) in Ottawa. The completed work shall provide a water shedding and durable roof assembly.

2. SCOPE OF WORK

The work includes, but is not limited to, the following:

2.1 General (Section 01 00 00)

- .1 **Mobilization/Demobilization:** Mobilize all labour, equipment, and materials necessary to carry out the work of this contract. At the completion of the project remove all debris from the site including but not necessarily limited to all nails, shingles and packaging materials from soft and hard landscaped areas.
- .2 **Exterior Access:** Provide access to all roof areas as required to facilitate the performance and inspection of the work described herein. This shall include all related equipment, safety supervision, etc. Upon completion of the work, demobilize all equipment and unused materials from the site, clean the site of all debris and repair any damage caused by the work.
- .3 **Fall Protection:** Where a worker may be exposed to a fall hazard, the employer is responsible for providing and ensuring that all such workers be adequately trained and protected by a fall protection system that meets the requirements of the Occupational Health and Safety Act - Ontario Regulation 213/91 - Section 26.

2.2 Roof Replacement

(Sections 02 41 13.02, 06 10 53.02, 07 62 00.01, 07 92 13)

- .1 **Shingle Replacement:** Remove and replace all shingle roofing. Remove and dispose of all existing roofing materials down to the structural wood deck to facilitate installing the specified new roofing system. The existing roof assembly consists of the following (from the top down):
 - .1 Cedar shingles
 - .2 Strapping
 - .3 Underlayment
 - .4 Wood Deck

The new roof system includes but not limited to shingles, underlayment, metal step flashings, dip edges and vents.

- .2 **Underlayment:** Provide new eave waterproof self-adhering modified bitumen membrane at areas indicated on PD-01. Install breathable underlayment at all other areas.
- .3 **Lead Coated Copper Flashing:** Supply and install new lead coated copper valley flashings, ridge flashings, eaves dripflashings, window sill cap flashings, chimney flashings, and counter flashings.

- .4 **Ridge Vent:** Install a new ridge vent as per PD-05 at areas indicated on PD-01.

2.3 Wood Repairs and Modifications

- .1 **Wood Deck Replacement:** Notify Consultant for review if deteriorated wood roof deck is encountered and requires replacement. Where agreed to by the Consultant, remove existing deck and replace with new. Allow for 10m² of repairs.
- .2 **Remove and Replace Deteriorated Rafters:** Mark out the deteriorated rafter ends at dormers for replacement as indicated on PD-01 and notify the Consultant for review. Upon approval, remove and replace to match existing construction and appearance. Remove and replace wood deck as required to facilitate work. Allow for replacing 6 full length rafters.
- .3 **New Eaves Molding:** Replace eaves molding to match where missing at area shown on PD-02.
- .4 **Exterior Eaves Painting:** Install a new protective architectural coating to the eaves soffits and rafter ends. Colour to match existing.
- .5 **Remove Existing Metal Chimney:** Remove the existing metal chimney as indicated on PD-01. Fill in opening with new wood decking.

2.4 Drainage and Lightning Rods

- .1 **Eaves-troughs:** Remove and salvage the existing prefinished eaves-troughs and lightning protection. Reinstall to match existing layout and configuration once roof replacement complete. Seal all joints to be water tight and touch up paint where damaged. The Contractor is responsible for any damages to the removal and re-installation of eaves-troughs and downspouts.
- .2 **Lightning Rod Cable Disconnection and Re-certification:** Disconnect the lightning rod cable to facilitate the shingle replacement. The disconnection, re-connection and certification of the lightning rod system shall be by an approved lightning rod contractor, including:
 - .1 Burchell Lightning Protection Limited, Garry Tysick, (613) 264-0456
 - .2 Dominion Lightning Rod Co. Ltd., Terry Zuliniak, (905) 628-6452

Upon completion of the lightning rod installation, submit a letter from the lightning rod contractor stating the system is certified for use.

2.5 Walls/Window Repairs and Modifications

- .1 **Dormer Window Sill Flashings:** Replace deteriorated wood sill as indicated on drawing PD-02 and provide new lead coated copper flashings over existing wood window sills. Form end dams to be installed behind the wood siding. Solder all joints.

- .2 **Wood Shingle Siding:** Remove and replace the dormer siding. Wrap with new vapour permeable sheathing wrap prior to reinstalling new shingles. Provide new wood siding shingles to match the dimensions and colour of existing. Provide continuous air and moisture barrier at interfaces with adjacent cladding and roofs. Provide an acceptable interface at the flashing upturn and as directed by the Consultant.

- .3 **Fire Escape Door and Landing:** Remove and replace all weather stripping on the door. Remove and replace all sealant around the door. Clean the existing pre-finished metal landing and install new self-adhered waterproofing membrane to the existing surface and protect with a new pre-finished galvanized metal cap.

End of Section 01 11 00

PART 1 – GENERAL

1.1 GENERAL

The table below outlines the items to be submitted to the Consultant. The following notes apply for each submittal:

- .1 The term "Engineered" refers to a submittal designed/reviewed by a Professional Engineer who is technically knowledgeable in the area of work and is registered to practice in the place of work. Drawings must be sealed and signed by the Professional Engineer.
- .2 Samples reviewed by the Owner/Consultant will be the standard for those materials. Material substitutions without prior written acceptance are not permitted. Allow extra time in the submitted schedule for colour matching materials, approval of samples and mock-ups, and delivery of accepted products to site.
- .3 Do not proceed with ordering the materials or fabrication until approval is received in writing. In the case of shop drawings submitted for review, do not proceed with fabrication until the drawings have been returned as "reviewed as Noted" or "Reviewed". If the Contractor proceeds with the work before approval is received, the Contractor is responsible to correct any damage or defects at no cost to the Owner.
- .4 Engineers preparing any design, including shop drawings required by these specifications are required to have Professional Liability Insurance in the amount of at least \$1 Million Dollars. The Contractor shall submit proof of their Engineer's insurance and a copy of their Certificate of Authorization with the project start-up documents.

1.2 FOR SHOP DRAWINGS:

- .1 Review of drawings by the Consultant does not relieve the Contractor of responsibility for the design adequacy and safety.
- .2 Drawings shall be clearly legible and are to illustrate all components that are a part of the system, such as the overall size and openings of the assembly. Where necessary, provide plans, vertical and horizontal sections and enlarged details to clearly illustrate components and other associated information. Information in shop drawings shall include material, thickness of all components, anchorages, construction method and finishes.
- .3 When required by the Consultant, the Contractor shall attend a meeting at the Consultant's office to discuss the shop drawings and to review their content. The shop drawings shall be submitted a minimum of one week prior to the meeting. The intent of the meeting will be to discuss/confirm the shop drawing and project requirements.
- .4 If required, revise the shop drawings as noted/discussed. Proceed with the mock-up once revised drawings are approved by the Consultant.
- .5 After the meeting and the completion of the mock-up, revise shop drawings as required and submit three copies of shop drawings.

PART 2 – REQUIRED SUBMITTALS

Related Section		Description	Time
N/A	N/A	Site Specific Safety Plan	Before Mobilizing on Site
N/A	N/A	Outline of Construction Safety Manual	Before Mobilizing on Site
N/A	N/A	Names of Trained Site Safety Personnel	Before Mobilizing on Site
N/A	N/A	Proof of WHMIS Training for Site Personnel	Before Mobilizing on Site
N/A	N/A	Names of Project Superintendent and Site Foreman	Before Mobilizing on Site
N/A	N/A	Emergency Telephone Number	Before Mobilizing on Site
N/A	N/A	List of Proposed Hazardous Materials	Before Mobilizing on Site
01 00 00	General Requirements	Schedule with details of each aspect of the work	Before Each Progress Draw (Used to Verify Quantities)
01 00 00	General Requirements	Building Permit	Before Mobilizing on Site
01 00 00	General Requirements	Pre-existing Deficiencies in work areas. If one is not submitted, the Contractor is responsible for addressing the deficiencies if the Consultant suspects the deficiency may have been caused by the work.	Before Mobilizing on Site
07 31 13.01	Slope Cedar Shingles	Cedar Shingle Manufacturer Data Sheet which contains the technical data for all materials used.	Before Commencing on the Respective Work
07 62 00.01	Sheet Metal Flashing and Trim for Sloped Roofing	Shop Drawing for Sheet Metal Flashing and Trim for Sloped Roofing showing details of all flashing, trims and means of attachment.	Before Commencing on the Respective Work
07 92 13	Elastomeric Joint Sealants	Manufacturer Written Recommendations Regarding Elastomeric Joint Sealant Application as required by this specification section.	Before Commencing on the Respective Work

End of Section 01 32 19

PART 1 – GENERAL

1.1 Install mock-ups to:

- .1 Provide an opportunity to review site conditions:
- .2 Make adjustments as necessary; and
- .3 Verify that the installation is carried out in a manner that is satisfactory to Owner and/or Consultant.

1.2 Mock-ups to:

- .1 Be installed at locations determined by the Consultant and the mock-up shall be completed on site unless stated otherwise by the Consultant.
- .2 Match properties of the intended finish product and the mock-up shall be installed by the same installers who will perform the general installation using the materials and methods specified.
- .3 Be 100% complete and approved by Owner and Consultant. Full-scale application may only proceed upon written approval of the mock-up by the Consultant. The Contractor is responsible to arrange for Consultant and Owner to be present during installation to view components which may become concealed as installation proceeds (e.g. structural anchorage, perimeter insulation, etc.). Rejected mock-ups are to be corrected as specified by the Consultant. Upon written approval the approved mock-up forms the standard for the method and quality of work to be performed through-out the project.

The Consultant may require field testing of the mock up prior to authorizing the work. The Consultant may request the manufacturer's representative to review the preparation and installation and provide written confirmation.

Mock ups are to be completed sufficiently in advance to permit time to review, correct rejected mock-ups and order materials without compromising the construction schedule.

PART 2 – MOCK-UPS REQUIRED

06 10 53.02	Rough Carpentry for Sloped Roofing	Rough Carpentry at Typical Eave Location: Construct carpentry mock-up at one typical eave location, including all securement fastening installed	2400mm long
07 31 13.01	Standard Slope Wood Shingles	Standard Slope Asphalt Shingles (Including Full Roof Assembly): One mock-up including all components a part of the full roof assembly.	1000 x 1000mm
07 31 13.01	Standard Slope Wood Shingles	Roof System Mock-Up: Prepare a mock-up of the roof assembly, including all specified components (including underlayments, flashings and accessories). Work shall not proceed until mock-up has been reviewed, and written authorization to proceed has been obtained from the Consultant.	2400mm square
07 62 00.01	Sheet Metal Flashing and Trim for Sloped Roofing	Sheet Metal Flashing and Trim Details for Sloped Roofing: One mock-up to include all sheet metal details.	2400mm long
07 62 00.01	Sheet Metal Flashing and Trim for Sloped Roofing	Sheet Metal Flashing and Trim for Sloped Roofing at Typical Eave Location and Wall Detail: One mock-up including typical eave and wall details. The mock-up to include all securement fastenings.	2400mm long
07 92 13	Elastomeric Joint Sealants	Elastomeric Joint Sealants For Review of Application Methods: Complete a minimum of 3 mock-ups for each material and substrate type, with the manufacturer representative present, that includes the following: 1) Install the specified sealant at representative locations; 2) checking existing sealant removal and surface preparation procedures (solvent wipe and primer, etc.); and 3) Allow the sealant to cure according to manufacturer recommendations. Perform adhesion testing at a minimum of 3 locations for each material and substrate type.	1000mm long for each material and substrate type

End of Section 01 43 39

PART 1 - GENERAL

- .1 Unless otherwise stated, the warranty shall include, at no cost to the Owner, all labour and materials to correct the defects and deficiencies. This shall include removal and reinstating components where required to gain access to the defect and/or deficiency. The warranty shall include all performance and aesthetic related issues as determined by the Consultant, such as leakage, debonding, corrosion, fading, discoloration, etc. The warranty excludes reasonable wear and tear.
- .2 The warranty period is two years unless otherwise noted.

PART 2 - NON-STANDARD WARRANTIES

Related Section		Comments	Warranty Period
07 31 13.01	Slope Cedar Shingles	Provide 10 year non-prorated material warranty issued by the shingle manufacturer which shall guarantee the performance of all shingle and accessory materials. Provide manufacturer's standard warranties for all shingle and accessory materials, inclusive of eave protection, flashing membranes, low slope roof membranes, preformed flashings and ventilation. Provide other standard shingle manufacturer warranties.	

End of Section 01 78 36

PART 1 - GENERAL

1.1 Description

This section specifies the requirements for the removal and disposal of existing roof system components and surface preparation prior to new system installation.

1.2 Environmental Conditions

- .1 Do not remove existing roofing materials during, or with risk of, inclement weather.
- .2 Do not remove a greater area of existing roofing than can be made temporarily watertight without allowing leakage in the event of unexpected precipitation.

PART 2 - MATERIALS AND PRODUCTS

No materials applicable to this section.

PART 3 - EXECUTION

3.1 Examination of Existing Systems

- .1 Standing water, snow and ice are to be removed from the surface of the roof system prior to removing any existing roofing materials.
- .2 Review surface drainage to ensure there is no obstruction, collection or poor drainage, depressions, irregularities or projections that will result in ponded water on the finished system. Any problems are to be brought to the attention of the Consultant.
- .3 Inspect all drains to ensure they are in working operation. Notify the Consultant if defects are found.
- .4 Make all measurements necessary to avoid any delays once work has started.

3.2 Protection of Property

- .1 Review conditions and occupancy below the area of roof to be replaced. In discussion with the Owner and Consultant, determine the level of interior protection and/or precautions required to prevent dust and debris from interfering with building operations.
- .2 In order to contain the debris and limit dust generation, material disposal from the roof to grade level containers shall be in closed bags if hoisting or via an enclosed chute.
- .3 The Contractor shall provide a means of direct contact with the local Environment Canada office to ensure constant weather updates are available.

3.3 Roof Tear-Off

- .1 To the extent defined by the project scope, remove shingles, underlayment (if present), flashings, eaves troughs, and lightning protection and all material that will not be re-used in the re-roofing project. Salvage those items which require reinstatement as defined by the project scope.
- .2 All loose and deteriorated material is to be removed from deck surfaces.
- .3 Avoid overloading. Stockpiling debris on the roof is not permitted.
- .4 If any deterioration is found on the structural roof deck, notify the Consultant for review prior to proceeding with the work.

3.4 Surface Preparation

- .1 Prior to beginning work, confirm that the deck is dry, smooth, clean and free of dust, dirt, moisture, snow, or ice.
- .2 Confirm that the deck is supported and secure wherever altered or repaired as part of the work.
- .3 Commencement of roof system application implies Contractor acceptance of the substrate.

End of Section 01 41 13.02

PART 1 - GENERAL

1.1 Description

This section specifies the installation of wood components as defined in the scope of work and drawings.

1.2 Related Work Sections

Section 02 41 13.02 - Preparation for Sloped Re-Roofing

1.3 References

CSA B111, Wire Nails, Spikes and Staples.

1.4 Environmental Conditions

The maximum acceptable wood moisture content is 20%.

1.5 Inspection and Testing

Notify Consultant for review of installation of sheet metal and caulking.

1.6 Warranty

Defects or deficiencies which are to be corrected by the Contractor at no cost to the Owner during the period of warranty shall include corroding of the fasteners, loose wood or shingles or other defects in material or workmanship as determined by the Consultant.

Warranty Period: 2 years

PART 2 - MATERIALS AND PRODUCTS

2.1 Wood Products

- .1 Lumber identification shall be by grade stamp of an agency certified by the Canadian Lumber Standards Accreditation Board.
- .2 Lumber shall be SPF Grade #2 or better.
- .3 Wood Nailing Strips and Wood Battens shall be SPF Grade #2 19mm x 65mm with no piece greater than 1200mm in length.
- .4 Fascia shall be Cedar Grade #1.
- .5 Plywood shall be exterior grade, Douglas Fir (meeting CSA 0151-M1989). Thickness to match existing.
- .6 All wood surfaces are to be protected with a preservative. Asphaltic or creosote based preservatives are not acceptable. Plywood and cut edges shall be protected by a liquid applied preservative. Acceptable products are:

- .1 copper azole, "Wolmanized Natural Select"
- .2 liquid applied preservative intended for use in protecting end cuts

- .7 Siding Stain: DeckScapes Exterior Acrylic Sloid Colour Deck Stain by Sherwin-Williams. Colour to match existing

- .8 Eaves Coating: A-100 Exterior Latex by Sherwin-Williams. Colour to match existing

2.2 Fasteners

- .1 All fasteners shall be suitably coated to prevent corrosion with exposure to moisture, and compatible with elements that it contacts, preventing galvanic corrosion between dissimilar metals.

- .2 Fasteners securing wood to wood shall be hot dipped galvanized, and provide a minimum 30mm embedment into the element being secured to.

PART 3 - EXECUTION

3.1 Existing Wood Deck

- .1 Where approved by the Consultant replace cut out portions of deck boards with boards of equal dimensions and of specified grade.

- .2 Seat each end of board on rafter with 25mm minimum bearing and secure to rafter with nails.

- .3 Deck Boards shall be fastened with 2 fasteners to every supporting element

3.2 Rafter Ends

- .1 Where approved by the Consultant remove and replace deteriorated rafters at the dormer roof. Allow for removing and replacing wood deck as required to facilitate.

- .2 Ensure structural elements are adequately supported.

- .3 Construct elements to match existing roof slope, with lines and members plumb and true.

End of Section 06 10 53.02

PART 1 - GENERAL

1.1 General

Conform to the requirements of the following:

- .1 ASTM B101-12 Standard Specification for Lead Coated Copper Sheet and Strip for Building Construction; CSA A123.3-05 Asphalt Saturated Organic Roofing Felt;
- .2 CSA B111-1974 R2003 Wire Nails, Spikes and Staples;
- .3 CSA 0118.1-97 Western Red Cedar Shakes and Shingles;
- .4 CSA 080 Series-08 Wood Preservation; and
- .5 National Building Code of Canada -2010.

1.2 Description

This section specifies the supply and application of wood shingles on a wood roof deck.

1.3 Inspection and Testing

Notify Consultant for review of the roof deck exposed after existing shingles have been removed.

1.4 Materials Storage

- .1 All materials shall be delivered and stored in their original packaging, bearing the manufacturer's name, related standards and any other specification or reference accepted as standard.
- .2 Provide a platform to prevent bundles of loose shakes from coming loose.
- .3 All materials shall be protected from weather and any harmful elements and shall not be exposed to temperatures lower than 10°C or higher than 50°C.
- .4 Materials delivered in rolls shall be carefully stored on end, with salvage edges up.
- .5 Store combustible materials away from heat and open flame.

PART 2 - MATERIALS AND PRODUCTS

2.1 Wood Shingles

Provide Certi-Last pressure preservative treated red cedar shingles to match existing dimension. Shingle widths are to be random in size 100mm minimum to 350mm maximum. Preservative to conform to CAN/CSA-080 Series-08 Wood Preservation.

2.2 Breathable Underlayment

Synthetic vapour permeable underlayment: Accepted products are RoofShield by Proctor, Delta-Vent S by Delta.

2.3 Cement

Lap cement to conform to CGSB 37-GP-M4A.

2.4 Eave Protection/Below Valleys/Upturns

- .1 For warm weather work (when average temperatures are above 5 °C), use self adhering membrane of rubberized asphalt bonded to polyolefine sheets. Acceptable products include:

Manufacturer	Accepted Product
IKO	Armour Guard Ice & Water Protector
W.R. Grace	Ice and Water Shield

- .2 For cold weather work, use roll roofing conforming to CSA Standard A123.2-M1979, Type M or S.

2.5 Nails

Shingle nails are to be 14 gauge, 63mm long corrosion resistant roofing nails of stainless steel, type 304 conforming to CSA B 111-1974.

2.6 Sheet Metal and Lead Coated Copper Flashings

- .1 Copper Vent Stack Sleeve to be 20 ounce lead coated copper complete with a lead coated copper cap.
- .2 Flashing to match existing roof pitch and properly tie into shingle roof construction.

2.7 Sheet Metal and Lead Coated Copper Flashings

Sheet metal and lead coated copper shall be as per Section 07 62 00.01

PART 3 - EXECUTION

3.1 Preparation for Shingles

- .1 Apply eave protection from the edge of the roof a minimum of 1800mm but no less than 750mm inside the projection of the inside of the exterior wall. Overlap and seal to the metal drip edge and wood deck. Apply self adhering membrane in accordance with manufacturer's specifications. If required, due to cold temperature or unusual substrate conditions, the sheathing shall be primed. Adequate adhesion must be achieved to omit application of primer as the discretion for the Consultant. Install roll roofing in accordance with CAN-A123.51-M85.
- .2 Install roofing in conformance with the NRCA Roofing Manual: Steep-slope Roof Systems-2009 Wood Shake and Wood Shingle Roof Systems construction details

- .3 At valleys, install one strip 1000mm wide of self-adhesive membrane centered on the valley. The self-adhesive membrane is to be installed in shingle fashion. Maintain a minimum 100mm side lap and 150mm end lap of the self-adhesive membrane. Stagger all end laps. Ensure continuous adhesion by rolling and brooming the membrane. All fish mouting and wrinkles to be cut-out and patched.
- .4 The remainder of the roof area is to be covered with breathable underlayment in shingle fashion. Install parallel with eaves. Fasten to deck with sufficient nails to hold in place until shingling. Overlap onto self-adhesive membrane a minimum of 100mm and cemented with lap cement. Overlap each strip extending up-slope a minimum of 150mm. Provide 50mm side laps. The underlayment must lay flat on the deck prior to securement. Rippling will not be accepted.
- .5 Install Vertical Wood Battens at 400mm o/c secured to wood deck at 300mm maximum spacing.
- .6 Install Wood Nailing Boards parallel to eaves and on top of wood battens at a spacing to accommodate shake exposure.
- .7 Install 12.5mm thick plywood 300mm wide at eaves on top of wood battens.

3.2 Installation of Shingles

- .1 General:
 - .1 Install shingles to the requirements of the National Building Code 2010, and in accordance with shingle manufacturers printed instructions.
 - .2 Install shingles over dry substrate.
- .2 Spacing:
 - .1 Shingle spacing between adjacent shingles to be 6mm in a straight line course pattern.
 - .2 Joints in any one course to be separated not less than 40mm from joints in adjacent courses, and in any three courses no two joints should be in direct alignment.
- .3 Nailing:
 - .1 Use 2 nails per shingle. Space nails 20mm from edge and 40mm above butt line of following course.
 - .2 The nails are to be driven flush and tight but not so the nail head crushes the wood.
 - .3 Nails are to penetrate a minimum of 20mm through the deckboards.
- .4 Starter Course:
 - .1 Install a triple shingle starter course at eaves.
 - .2 Project butts a minimum of 40mm from first deck board or crown moulding.

.5 Typical Course:

- .1 Install typical course with weather exposure matching existing and having triple thickness of shingle at any given point.
- .2 Lay shingle with grain perpendicular to eaves.
- .3 In laying mixed flat and vertical grain shingle avoid lining up joint with centerlines of "hearts" and never break a joint directly below centerlines of "hearts".

.6 Gable Rake:

- .1 Place 150mm tilting fillet of cedar bevel siding along the full length of each gable, with the thick edge flush with the sheathing edge.
- .2 Cut back the butts of shingles which rest on tilting fillet to produce slight slant.
- .3 Clip off the upper corner of edge shingles.
- .4 Shingles are to project a minimum of 20mm over end rafters moulding to be from 20mm.

.7 Open Valley:

- .1 Provide tilting fillets along both sides of all valleys.
- .2 Do not lay shingles with grain parallel to centreline of valleys.
- .3 Joints are not be broken into valleys.

.8 Mitred Hip:

- .1 Cut shingles selected for finishing hip so that grain of wood runs parallel with line of hip.
- .2 Run shingle ends over alternately at centreline of hip and dress to bevel of opposite side of roof.
- .3 Provide concealed nailing.

.9 Ridge Common Lap:

- .1 Butts of shingles comprising of top courses on either side of the ridge are to be placed against a guide strip, or chalk line, down from centerline of ridge.
- .2 Run shingles ends over alternately at centerline of ridge and dress to bevel of opposite side roof.
- .3 Provide concealed nailing.
- .4 Provide insect screening at ventilation openings.
- .5 Complete ridge by installing manufacturer's pre-fabricated ridge shingles.

End of Section 07 31 13.01

PART 1 - GENERAL

1.1 Description

This section specifies the supply and application of pre-finished galvanized sheet metal flashings and lead coated copper flashings as required by the drawings and specifications.

1.2 Related Work

Section 02 41 13.02 - Preparation For Sloped Re-Roofing
Section 07 92 13 - Elastomeric Joint Sealants

1.3 References

ASTM B101-12 Standard Specification for Lead Coated Copper Sheet and Strip for Building Construction

1.4 Environmental Conditions

Membrane and primers be applied in conformance with Manufacturer's most recent published temperature requirements.

1.5 Inspection and Testing

Notify Consultant for review of installation of sheet metal and caulking.

1.6 Warranty

Defects or deficiencies which are to be corrected by the Contractor at no cost to the Owner during the period of warranty shall include corroding of the sheet metal or fasteners or other defects in material or workmanship as determined by the Consultant.

Warranty Period: 2 years

PART 2 - MATERIALS AND PRODUCTS

2.1 Fastening Strips

- .1 Sheet Metal: 20 gauge galvanized sheet metal.
- .2 Lead Coated Copper: 20 ounce cold rolled lead coated copper sheet metal.

2.2 Finished Sheet metal and Lead Coated Copper

- .1 Sheet metal: 20 gauge galvanized prefinished sheet steel sized to project requirements. Colour(s) are to be selected from Standard 8000+ Series Colour Chart by the Owner. To meet or exceed CGSB 93-GP-3M "Sheet Steel Galvanized Prefinished Residential". Any chipped, scratched or dented material shall be rejected. All flashing and trim to have folded edges to improve appearance and stiffness. Exposed cut edges are not allowed.

- .2 Lead Coated Copper: 20 ounce cold rolled lead coated copper sheet sized to project requirements. Lead Coated Copper to meet or exceed ASTM B101-12 Standard Specification for Lead Coated Copper Sheet and Strip for Building Construction; Any chipped, scratched or dented material shall be rejected. All flashing and trim to have folded edges to improve appearance and stiffness. Exposed cut edges are not allowed.

2.3 Fasteners

Fasteners shall be sized to suit application type as follows:

- .1 **Nails:** shall be copper, brass, bronze or stainless flathead, barbed, wire slating nails, not less than No. 12 gauge.
- .2 **Screws:** 3.35mm diameter stainless steel conforming to ASTM A167 (304) or brass. Screws shall have round, flat heads
- .3 **Rivets:** Solid copper 5mm diameter flat head rivets with solid copper mandrels and washers.
- .4 **Washers:** Washers shall be lead, 1mm thick.
- .5 **For attaching metal to masonry:** 1/4 in. diameter stainless steel "expansion pins" with plastic sleeves (such as Nylon Nailin by Powers Fasteners). Length as required to obtain 40mm embedment into the masonry back-up. Install into masonry with min. 75mm edge distance.
- .6 **Cleats:** Cold rolled copper, 50mm wide x 75mm long, same copper weight as the roofing/flashing.
- .7 **Exposed Hex Head Fasteners:** Type 300 stainless steel hex head fasteners with fully bonded EPDM washer, Scots Trugrip by ITW Buildex.

2.4 Solder

For lead coated copper: ASTM B32, Class 50A or 50B, Bar Form, 60% block tin and 40% pig lead.

2.5 Flux

Flux for soldering work: Conforming to ASTM B813, such as muriatic acid killed with zinc.

2.6 Sealant

- .1 Conform to the requirements of Section 07 92 13 - Elastomeric Joint Sealants.
- .2 Colour to match sheet metal or approved by the Owner.

2.7 Plastic Cement

- .1 Asphaltic Plastic Cement shall conform to CGSB 37.4-M89.
- .2 Lap Cement shall conform to CGSB 37.4-M89.

PART 3 - EXECUTION

3.1 Fabrication

- .1 Use competent sheet metal mechanics and work accurately to details indicated and specified.
- .2 Construct all joints between sheet metal panels as S-lock type joints. Install sheet metal sections in 2400mm maximum lengths.
- .3 Construct all joints between lead coated copper sheets with flat-lock seams where possible. Install lead coated copper metal sections in 3000mm maximum lengths.
- .4 Form bends with straight sharp lines. Double back exposed and/or cut edges 13mm for stiffness. Leave no unfinished metal exposed.
- .5 Drip edge flashings at eaves and rake to have a minimum 50mm high vertical leg. Drip edge to extend a minimum of 25mm below the top edge of the eavestrough.

3.2 Installation of Flashing

- .1 General:
 - .1 Install sheet metal in conformance with CGSB 93-GP-5 "Installation of Residential Siding, Soffits, and Fascia".
 - .2 Ensure that all horizontal surfaces have positive slope. Panned surfaces are not acceptable.
- .2 Eaves and Rakes:
 - .1 Install new drip edge overhanging 13mm, and extending a minimum 25mm into the eaves trough with a minimum 75mm flange extending onto the roof deck boards.
- .3 Valley:
 - .1 Intersecting roof planes of equal pitch: valley sheets to extend from centerline of valley, up each side a distance of at least 300mm.
 - .2 Intersecting roof planes or unequal pitch: valley sheets to extend from centerline of valley, up side of valley with steeper pitch at least 300mm and up side of valley with lower pitch a distance of 350mm.
 - .3 Valley flashings for open valley, to be made shingle fashion, lapped not less than 200mm.

- .4 Change of Slope:
 - .1 Extend exposed change of slope on upper slope flashing as far as possible without being punctured by nails and cleated. On lower slope extend change of slope minimum 150mm over shingles. Insert wood cant held by soldered metal straps 25mm above butts of first course of upper slope.
 - .2 Extend concealed change of slope on upper slope flashing as far as possible without being punctured by nails and cleated. On lower slope carry change of slope down between shingles of double course to within 13mm of butts. Fasten these shingles with countersunk brass screws passing through lead washers.
- .5 Hip and Ridge:
 - .1 Install hip and ridge flashing beneath last course of shingles.
 - .2 Flashing to extend on each side of ridge to depth of last course.
- .6 Base:
 - .1 Base flashing to have a minimum height of 150mm and a minimum projection out on roof of 100mm.
 - .2 Where base flashing is stepped, ensure steps are equal, horizontal width between 230mm and 300mm and vertical height between 2 and 4 courses.
 - .3 On sloped intersections, ensure sheets are lapped a minimum of 75mm.
 - .4 When run horizontally, ensure sheets are flat locked and soldered.
 - .5 Ensure long seam joints at vertical corners of chimney.
- .7 Cap/Counter:
 - .1 Turn cap, or counter flashings, down over base flashings to not less than 75mm of surface of finished roof.
 - .2 Extend building paper up under exterior coverings such as wood siding and shingles not less than 100mm above butt of bottom course of shingles.
- .8 Continuous:
 - .1 Minimum height of 150mm.
 - .2 Minimum projection out on roof 100mm.
 - .3 Lap sheets a minimum 100mm and solder only on top.
- .9 Sidewall Flashing:
 - .1 Provide window caps and other projections with flashings at points where rain water accumulates or snow piles. Extend flashing up under shingles of side walls at least 150mm.
 - .2 Reinforce mitred corners, or jointed corners, with a square strip.
- .10 Chimney:
 - .1 Insert cap flashing 19mm in new reglet (12.5mm wide and 25mm deep) at chimney by removing mortar, then filling with bituminous mastic. Turn cap flashing down over base flashing. The outside edge is to be turned back on itself at least 13mm.

- .2 Where step flashings are to be installed, provide 75mm lap over lower flashing. Do not secure shingle through step flashings. Do not secure step flashings to vertical wall.
 - .3 At the upper side of all chimneys, fabricate a lead coated copper metal saddle to direct water around the chimney. Extend flashings a minimum of 150mm above the saddle. Set into plastic cement.
- .11 Finish:
- .1 Do not apply any coating or finish to retard natural weathering.

End of Section 07 62 00.01

PART 1 - GENERAL

1.1 Description

This Section specifies the materials and methods for work involving sealants.

1.2 Related Work

Section 07 62 00.01 Sheet Metal Flashing and Trim for Sloped Roofing

1.3 Environmental Conditions

- .1 Ensure that sealant and substrate are not less than 5°C when applied.
- .2 Should it become necessary to apply sealants at temperatures below 5°C, inform Consultant and consult the sealant manufacturer's representative. Proceed on their written instructions only.
- .3 When working in cold temperatures, only clean/prime as much surfaces that can be sealed before frost and/or condensation re-occur.

1.4 Quality Assurance

- .1 The Contractor shall arrange for the sealant manufacturer's representative to inspect the work, perform on-site adhesion testing at the mock-up and at regular intervals during the work. Provide written project recommendations including observations made during site visits and on-site test results in accordance with the project specifications.
- .2 Notify Consultant for review of surface preparation prior to sealant application, and completed sealant application prior to demobilizing from each work area.

1.5 Warranty

The Contractor shall repair all defects and deficiencies at no cost to the Owner. Defects or deficiencies shall include, but are not limited to joint leakage, cracking, melting, running, shrinkage, sagging, loss of adhesion, loss of cohesion, loss of colour, staining or damage of adjacent work surfaces.

Warranty Period: 2 years

PART 2 - MATERIALS AND PRODUCTS

2.1 General

- .1 Except as noted otherwise, the colour of the sealants shall match the surfaces to be caulked to the satisfaction of the Owner.
- .2 Provide compatible sealants as tested by sealant manufacturer for lead coated copper substrates.

2.2 Exterior Sealants

.1 Polyurethane Sealants (for all exterior joints)

Use one of the following single component, elastomeric, moisture curing polyurethane sealant, conforming to CAN/CGSB-19.13-M (latest edition):

Manufacturer	Accepted Products
Sika Construction	Sikaflex 15LM
Tremco Ltd.	Tremco Dymonic

2.3 Solvents

.1 Solvents

Solvents/cleaners for surfaces to receive sealant shall be compatible with the surfaces to receive the cleaner (i.e. solvent). The sealant manufacturer shall recommend and approve in writing the cleaner type(s) for each sealant in the project.

2.4 Accessories

.1 Joint backing shall be used to control depth of joint to recommended thickness of sealant and to prevent three sided adhesion.

.1 **Backer Rod:** extruded polyolefin foam, non gassing and have a diameter 25% larger than joint width. Acceptable products include:

Manufacturer	Accepted Products
SOF-Type Rod	Industrial Thermo Polymers
SOF ROD	Tremco Ltd.

.2 **Bondbreaker Tape:** pressure sensitive adhesive tape which will not bond to the sealant. Acceptable products include:

Manufacturer	Accepted Products
#226 or #481 Tape	3M Canada Inc.
#969 Polyethylene Tape (Tuck)	Canadian Technical Tape
#40 Clear Bond Breaker Tape	Valley Industrial Products

Alternatively, apply a wax crayon to the substrate to prevent 3 sided adhesion.

.2 Void Fillers

.1 Unless otherwise specified, insulation for packing into large voids and cavities shall be light weight resilient, inorganic fibrous batts. Accepted products are Roxul "Flexibatt Batt Insulation 07210" or Owens Cornings "Fiberglass Pink Friction Fit Batt".

.2 Where specified, use a single component, non solvenated polyurethane foam, conforming to CAN/CGSB-51.23 (latest edition), "Spray-Applied Rigid Polyurethane Cellular Plastic Thermal Insulation". Use Enerfoam by Dow Chemical or approved equivalent.

.3 Miscellaneous

- .1 Cloths for solvent cleaning of surfaces prior to application of sealants shall be clean, white, solvent resistant cloths. Coloured cloths shall not be used. Change cloths frequently as they become soiled during cleaning.

PART 3 - EXECUTION

3.1 General

- .1 Apply sealants only to surfaces which are structurally sound and completely dry, at air and material temperatures within acceptable range established by manufacturer's specifications.
- .2 Application should be completed immediately after cleaning and before the reformation of frost and/or condensation or other forms of substrate contamination. Development of frost and condensation is time dependent upon local temperature and humidity.
- .3 Consult and follow sealant manufacturer's project recommendations.

3.2 Surface Preparation

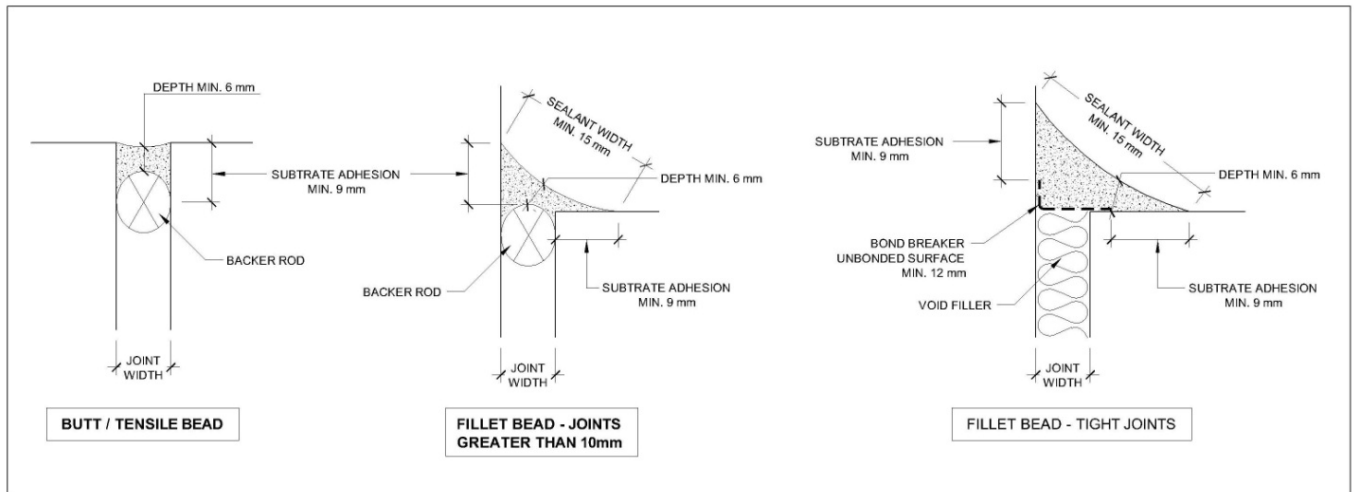
- .1 Remove all existing sealant to expose a sound substrate, without damaging adjacent finishes or causing damage to the substrate.
 - .1 For Concrete and Masonry Surfaces, remove dust, paint, loose mortar and other foreign matter by brushing and vacuuming or blowing air.
 - .2 For Ferrous & Metal Surfaces, remove dust, silt, scale, oxidation and coating by scraping, wire brushing or grinding.
- .2 Clean all surfaces to receive sealant by wiping with a clean cloth saturated with recommended cleaning solvent and by following immediately with another clean cloth to wipe the surface dry (2 rag method). Clean only as much area as can be sealed in one 1 hour. If cleaned areas are exposed to rain or contaminants (dirt, dust, etc.), the surface must be cleaned again.

3.3 Joint Backing

- .1 At large open cavities fill cavity with batt insulation or spray foam insulation prior to the installation of the backer rod.
- .2 Install backer rod or apply bond breaker tape prior to sealant installation.
- .3 Tightly install backer rod without stretching, twisting, braiding or puncturing its outer skin.
- .4 Use an approved installation tool that is blunt surfaced and developed to accurately set the backer rod at the required depth to achieve recommended sealant profile.
- .5 Where joint shape does not permit installation of backer rod, install bond breaker tape.

- .1 In a tensile bead or butt joint configuration, install tape only at bottom of gap (width of tape shall be same as width of gap). Do not install tape on surfaces of joint where sealant will be applied.
- .2 In an angle or fillet bead configuration, install tape directly over joint/gap to prevent three sided adhesion of sealant. Minimum width of tape shall be 12mm ($\frac{1}{2}$ ").
- .6 Joint backing must be thoroughly dry. Do not install more joint backing/bond breaker tape that can be sealed in one working day.

3.4 Sealant Bead Profile



ECL4-A2: Sealant Bead Profiles

- .1 Maintain the minimum and maximum sealant depths as recommended by the manufacturer. Provide a sealant depth that is $\frac{1}{2}$ the joint width where possible within these limits.
- .2 Minimum sealant profile dimensions shall be achieved at all locations. Increase average sealant size as required to accommodate application tolerances.
- .3 Sealant adhesion surface shall be equal or greater than the sealant depth, and not less than 9mm.
- .4 Unless otherwise approved by the Consultant, joint widths shall be greater than 10mm. Identify any joint widths less than this width to the Consultant for direction.
- .5 Angle beads shall have a minimum 15mm sealant width. Where angle joint widths are less than 10mm, a bond breaker shall be employed to assure a minimum total 12mm unbonded surface.
- .6 For joints wider than 19mm, application of sealant in several passes may be required (depend on joint configuration, weather conditions, access and material type). Follow the sealant manufacturer's recommendations for maximum joint width and application methods.

3.5 Sealant Application

- .1 Apply sealant using equipment approved by, and in accordance with the manufacturer's written instructions.
- .2 Immediately after application, tool the sealant to ensure firm, full contact with the faces of the joint. Neatly tool the surfaces to a slight concave profile. Avoid pulling the sealant out of the joint by frequent cleaning of the tooling instrument. Surface of sealant to be smooth, free from ridges, wrinkles, sags, air pockets and embedded impurities.

3.6 Cleaning

- .1 Remove sealant smears and droppings on completion of sealant installation in affected areas.
 - .1 For non-porous surfaces (i.e. metal and glass), it is recommended to immediately remove all excess sealant adjacent to the joint with one of the recommended solvents as work progress.
 - .2 For porous surfaces, it is recommended to allow sealant to develop initial cure, then remove by abrasion or other mechanical means. Caution should be exercised to maintain original surface integrity.
- .2 Remove masking tape immediately after tooling of joints.
- .3 Cleaning solutions and methods to be recommended in advance by the sealant manufacturer.

End of Section 07 92 13